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CONTENTS	PAGE
Measures for Increasing Production and Procurements of Agricultural Products (V. Semenov; EKONOMIKA SEL'SKOGO KHOZYAYSTVA, Jan 80) .....	1
Progress, Problems in Chemical Service in Belorussia (SEL'SKOYE KHOZYAYSTVO BELORUSSII, Nov 79) .....	14
Problems, Progress Discussed Working Toward Unified Service, by M. G. Kudreyko	
Meat Industry Totals for 9 Months of 1979 (N. M. Yesin; MYASNAYA INDUSTRIYA SSSR, Dec 79) .....	25
Utilization of Food Scraps for Livestock Feed (L. P. Astasheva; ZHILISHCHNOYE I KOMMUNAL'NOYE KHOZYAYSTVO, Dec 79) .....	31
Specialized Kolkhozes for the Production of Livestock Feed (V. Arkhipov; PRAVDA UKRAINY, 15 Jan 80) .....	33
Experience in Remodeling Livestock Farms in Belorussia (K. F. Borisovets, et al.; SEL'SKOYE KHOZYAYSTVO BELORUSSII, Dec 79) .....	37
Complexes Urged for Breeding and Dairy Farming (L. Ernst; SEL'SKAYA ZHIZN', 6 Jan 80) .....	42
Yaroslavskaya Oblast Dairy Production Poor (Editorial Report) .....	46
Armenian Livestock, Feed Production Up, Problems Remain (Editorial Report) .....	47



CONTENTS (Continued)	Page
Improved Accounting for Livestock Feed Expenditures Urged (D. Ya. Tuayev; ZHIVOTNOVODSTVO, Oct 79) .....	48
Aid and Incentives for Those Who Maintain Private Livestock Urged (P. F. Kozlov, I. A. Sokolov; ZHIVOTNOVODSTVO, Dec 79) .....	52
Evaluation of Breeding and Productive Qualities of Cattle (A. Dolgov, N. Podgornaya; SEL'SKOYE KHOZYAYSTVO MOLDAVII, Nov 79) .....	57
New Cattle Breeds Developed To Increase Production (I. Saliy, et al.; SEL'SKOYE KHOZYAYSTVO MOLDAVII, Nov 79) .....	61
Industrialized Poultry Raising in Odesskaya Oblast (F. Chernetskiy; IZVESTIYA, 20 Dec 79) .....	64
Specialization in Poultry Raising in Vitebskaya Oblast Detailed (V. F. Alekseyev; SEL'SKOYE KHOZYAYSTVO BELORUSSII, Dec 79) .	67
New Poultry Complex Being Built in Odesskaya Oblast (Ye. Zabortsev; TRUD, 11 Jan 80) .....	70
Further Development of Grain Crop in Nonchernozem Zone (K. Budin; SEL'SKOYE KHOZYAYSTVO ROSSII, Nov 79) .....	71
Changes in Payments for Grain, Seed Delivery (B. Tarasenko; ZAKUPKI SEL'SKOKHOZYAYSTVENNYKH PRODUKTOV, Sep 79) .....	75
Converting Fodder Production Into a High Intensity Sector (N. G. Andreyev; VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI, Nov 79)	86
Minskaya Oblast Feed Procurement Criticized (Various sources, 27 Dec 70, 29 Jan 80) .....	91
Food Scraps Under-Utilized Cartoon Comment, by A. Garmazy	
Weather Conditions' Affect on Soil and Crops (N. Ignatova; SEL'SKAYA ZHIZN', 15, 24 Jan 80) .....	93
Crop Development Reviewed Soil Temperatures Avoid Winterkill	

## MEASURES FOR INCREASING PRODUCTION AND PROCUREMENTS OF AGRICULTURAL PRODUCTS

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 1, Jan 80 pp 23-31

[Article by V. Semenov, Doctor of Economic Sciences and chief of the Administration for Agricultural Financing of the USSR Ministry of Finances: "Procurement Plan and Stimuli"]

[Text] The economic system of a developed socialist society is characterized by accelerated growth of the material-technical base, a high level of socialization of the means of production and more complete use of objectively active economic laws.

In connection with the progressive movement of society towards communism, measures are being carried out in our country aimed at further improving agricultural production. The strengthening of the country's economy and improvements in the standard of living of our Soviet people are dependent upon this most important branch of the national economy.

In the system of measures directed towards achieving further improvements in agricultural production, a great amount of importance is being attached to scientifically sound planning for the procurement of agricultural products and to stimulating kolkhozes and sovkhoses into increasing their production and sale of products to the state.

During the March (1965) and July (1970) plenums of the CPSU Central Committee and in the decisions handed down during the 23d, 24th and 25th party congresses, a system was developed for planning the procurement of agricultural products and for stimulating the over-fulfillment of such procurements. This system was based upon the establishment of stable plans for the procurement of agricultural products for a five-year period and an overall procurement volume for agricultural products, including above-plan sales.

As is known, firm plans for the procurement of agricultural products were retained for the Tenth Five-Year Plan, with a payment amounting to 50 percent of the procurement prices being paid out for above-plan sales.

Thus, for 1976 the firm plan for grain procurements was approved in the amount of 75 million tons, for 1977 -- 76 million tons, for 1978 -- 77 million tons, for 1979 -- 78 million tons and for 1980 -- 79 million tons. In order to satisfy more completely the requirements of the national economy, the kolkhozes and sovkhoses must sell products not only in conformity with the firm procurement plan assigned to them, but also over and above the plan: grain -- no less than 17 percent, sunflower seed, raw cotton, sugar beets and potatoes -- 15 percent, livestock, poultry, eggs and wool -- 3 percent.

In the interest of ensuring that the kolkhozes and sovkhoses do not sustain losses, the procurement prices were raised in keeping with the volume of existing payments for the sale of products, both in fulfillment of the plan and in excess of it. Thus, since 1 January 1976 the procurement prices on the whole have been raised by 2.1 billion rubles, owing to a reduction in payments for above-plan sales at raised prices. For example, in the case of grain the prices were raised by 7.8 percent, for raw cotton -- by 2 percent, for livestock, poultry, milk, eggs and wool -- by 3 percent. As a result, the existing payment amounts to kolkhozes and sovkhoses for agricultural products sold to the state were retained.

The firm plan and the above-plan sale of crop husbandry and livestock breeding products are established by republics, oblasts and rayons. However, the kolkhozes and sovkhoses are provided only with a firm plan that is based upon the plan established for the rayon. Thus a kolkhoz or sovkhos has a firm plan and a rayon, oblast or republic -- a national economic plan which includes above-plan sales.

The principal index for describing the operation of a kolkhoz or sovkhos and also for serving as the basis for issuing incentives to them is that of fulfillment of the firm plan for selling products to the state. In the case of the national economic plan, it is considered to be mandatory only for procurement and processing organizations. The entire production program of the light and food industry and also retail commodity turnover are based upon this plan. Thus, duplicity has been created in the planning for procurements of agricultural products. It is based upon the principle of issuing incentives for above-plan sale of products to the state. It is called upon to raise the role played by the procurement and processing enterprises in the procurements of agricultural products.

As a rule, the procurement and processing enterprises conclude contractual agreements with the kolkhozes and sovkhoses for the procurement of agricultural products. The procurement volumes and schedules and the responsibilities of the sides are set forth in these agreements. However, responsibility for the timely delivery and acceptance of agricultural products is of little consequence with regard to the financial activities of either the agricultural enterprises or the procurement organizations, since it is comparatively limited in extent. Moreover, the kolkhozes and sovkhoses do not strive to reveal or expose their potential for over-

fulfilling the firm plan during the course of concluding contractual agreements. The only document in which the potential of a farm is revealed is the production-financial plan. However, it cannot serve as the basis for determining the volume of procurements.

Nor does the inspection service for procurements and the quality of agricultural products in the various rayons possess any rights with regard to correcting the plans.

The presence of two plans -- a firm plan for a kolkhoz and a national economic plan for a rayon, oblast or republic -- lowers the role played by these inspectorates in the work of ensuring fulfillment of the national economic plan for procurements. "Recently" stated Comrade L.I. Brezhnev during the July (1978) Plenum of the CPSU Central Committee, "in addition to the firm plans, so-called overall procurement volumes and various additional tasks have come into being. In essence, a plurality of plans has appeared. In some areas, the practice of frequent and unsound changes to the plans has been revived. This lowers the mobilizing role played by a plan."

As a result, the existing practice of stimulating an increase in production and procurements is bringing about a reduction in the plans for procuring agricultural products at a number of kolkhozes and sovkhozes. In this regard, the firm plan must be replaced by improved indices for the plan and for issuing incentives for real increases in the production and sale of agricultural products to the state. At the same time, it should be emphasized that changes in planning and accounting for agricultural product procurements can be effective when further improvements are carried out in the economic mechanism and when combining the interests of society on the whole and those of agricultural enterprises in particular. The working out of one problem without taking into account the economic system of a farm, as revealed by the experience accumulated in the development of kolkhoz and sovkhoz production, cannot produce the desired results.

The interrelationships between agriculture and industry take place in the form of an exchange and based upon commodity-money relationships. In this regard and also in connection with work aimed at improving the mechanism for controlling agricultural production, a great amount of importance is being attached to the establishment of economically sound prices for agricultural products sold to the state and to industrial products acquired by the kolkhozes and sovkhozes. The procurement prices are arrived at so as to ensure compensation for the production expenses for the agricultural products and also so as to provide the profit required for expanding production and creating economic incentive funds. The rates for expanded reproduction in agriculture and the material interest of kolkhozes and sovkhozes in increasing the production of agricultural products are dependent upon an economically sound price level, when the prices are established on a directive basis.



Kolkhozes and sovkhoses which operate under different production conditions have different production cost levels for the products they produce. Thus different opportunities arise for reproduction. Differentiated procurement prices play a substantial role in smoothing out these conditions.

The procurement prices for grain crops were established for 80 zones and those for sugar beets -- for 32 zones. Following the July (1978) Plenum of the CPSU Central Committee, the procurement prices for livestock products were differentiated to a considerable degree. For example, 74 prices were established for cattle, for hogs -- 41, for sheep -- 43 and for milk -- 195 prices. In some rayons, the kolkhozes and sovkhoses sell milk to the state according to 3-4 different prices.

At the same time, it is impossible to achieve equal reproduction opportunities for sovkhoses and kolkhozes which operate under different conditions based upon procurement prices alone. The prices must be accompanied by economic measures concerned with the distribution and redistribution of net income created both in agriculture and in other branches of the national economy, by means of the price and finance-credit mechanism. In connection with increasing the procurements of agricultural products, great importance is being attached to the 50 percent bonus being added to the procurement prices for the sale of products over and above the firm plans. Moreover, commencing in 1976, incentives have been employed for the above-plan sale to the state of all types of agricultural products.

The overall volume of procurements, with the principal crops singled out, is reflected in the national economic plan. The firm plan for the kolkhozes and sovkhoses is completed from the standpoint of the crops. However, the issuing of procurement incentives is carried out for the entire plan. Thus a monetary bonus amounting to 50 percent of the prices is paid out to the kolkhozes and sovkhoses following their fulfillment of the sales plan for wheat and rye from an overall standpoint. As a result, the kolkhozes and sovkhoses over-fulfill their sales plans for wheat and, despite failure to fulfill their plans for rye, obtain a 50 percent bonus added on to the procurement prices.

It should also be borne in mind that corn is harvested considerably later than wheat. Thus the kolkhozes and sovkhoses, when fulfilling their plans for grain crop procurements by means of wheat or barley, often leave the grain corn for cattle feed.

The data in the following table (in %) reveals fulfillment of the firm plan for selling grain to the state, by individual crops

	1976	1977	1978
Wheat	98.2	86.0	124.0
Barley	228.0	127.0	170.4
Rye	85.6	37.1	97.3
Millet	96.4	49.1	63.7
Buckwheat	52.0	56.4	61.3

Thus the system of stimulating plan fulfillment for individual types of products, regardless of the plan for procuring them in the proper assortment, leads to an artificial replacement of those crops deemed unsuitable for a farm, mainly the more labor-consuming and low productivity crops, even though the procurement prices reflect the raised expenditures for their cultivation.

As a result, the food industry and trade are not being supplied with grain crops in the required assortment and the mixed feed industry -- with the corn required for producing mixed feed. The payment of bonuses for carrying out not only the procurement plan for each crop, but also for the entire plan, would undoubtedly have stimulated the delivery of a better variety of products to the state.

Many problems are arising in the branches of livestock husbandry. The payment of a 50 percent bonus for the above-plan sale of products by kolkhozes and sovkhoses is being carried out for livestock, poultry, milk, wool and eggs. Moreover, the bonuses for livestock and poultry are paid out on the condition that an increase takes place in the number of livestock on a farm at the beginning of the year. This precludes the possibility of an unwarranted delivery of funds for a reduction in the number of animals. In those instances where a kolkhoz or sovkhos carries out livestock husbandry specialization in accordance with a long-range plan approved by higher organizations, a bonus is paid out on the condition that an increase takes place in the number of productive livestock, in those branches in which the enterprise is specializing. At the same time, the farm must provide full compensation in a conversion for live weight increase in meat.

A 50 percent bonus is also paid out to the fattening farms of livestock procurement organizations for meat delivered to the state over and above the annual plan. Such bonuses are paid out on the condition that an increase took place during the year in the number of livestock raised directly on the farm.

Following 1 January of the next year, the total bonus amounts received by kolkhozes and sovkhoses for the above-plan sale of livestock and poultry to the state are reflected in the operational results for the preceeding year. The total bonus amounts serve to increase the profits (net income) of the sovkhoses and kolkhozes. This underscores the direct interest of the farms in over-fulfilling the livestock product procurement plans and in maintaining their cattle stock.

Bonuses for above-plan sales to the state of milk, eggs and wool are paid out to the kolkhozes and sovkhoses at the moment that the annual plan is fulfilled.

Pedigree cattle sold to the state and also meat, milk and eggs expended for public catering are taken into account in fulfillment of the plan. Those kolkhozes and sovkhoses for which a plan for selling livestock products to

the state, as opposed to crop husbandry products, was not established. It is not paid bonuses for their livestock, poultry, milk, wool or eggs. It is also possible also that bonuses should not be added to the procurement prices for crop husbandry products in the case of kolkhozes and sovkhoses for which plans for selling products to the state were not established. The payment of bonuses only to those farms for which sales plans were established strengthens planning discipline and raises the effectiveness of the plans.

Fulfillment of the plan for the procurement of livestock products by kolkhozes and sovkhoses throughout the country in 1978 was as follows (in percent):

	Number of Farms Which Fulfilled the Plan	Including by 103% or higher	Number of Farms Which Did Not Fulfill the Plan
Livestock and poultry	71	64	29
Milk	63	55	37
Eggs	81	68	19
Wool	71	61	29

In 1978, 33,177 kolkhozes and sovkhoses sold 1.44 million tons of livestock and poultry in live weight, or 13.9 percent, to the state. At the same time, 13,231 kolkhozes and sovkhoses fell short in their deliveries to the state by 1.14 million tons of livestock and poultry. This was 22.5 percent less than the plan. Approximately 3.82 million tons of milk were procured at raised prices over and above the plan, while sales by other farms fell short of the plan by 2.80 million tons. Such sharp deviations from the planned volumes for livestock product procurements for individual farms also serve to underscore shortcomings in planning.

The payment of a 50 percent bonus added on to the procurement prices for the above-plan sale of crop husbandry and livestock products to the state is directly affected by both the weather conditions under which the agricultural crops are grown and by the validity of the established firm plans for procurements. The stimulating effect of the firm plans decreases as the plans are raised or lowered.

The shortcomings which occur in the development of a procurement plan are directly reflected in the financial status of the kolkhozes and sovkhoses. At the same time, the presence of two plans -- a firm plan for the kolkhozes and a national economic plan for the procurement and processing enterprises -- inhibits the development of the overall agroindustrial complex.

During the July (1978) Plenum of the CPSU Central Committee, Comrade L.I. Brezhnev, in discussing the shortcomings of multiple plans, pointed out: "For the new five-year plan, a single plan for the procurement of

agricultural products, for 5 years with a breakdown by years, should be established for the republics, krays and oblasts, rayons, kolkhozes and sovkhoses."

"At the same time, improvements should be carried out in the system for issuing incentives to those farms that achieved high indices in production growth and in the sale of products to the state."

It is our opinion that improvements in the planning of agricultural product procurements should be implemented in close coordination with the existing payments for products and with the present system of procurement prices.

The planning for agricultural product procurements is based upon the need for satisfying the requirements of the population for the nutritional products of the light and food industry -- for the raw materials of kolkhozes and sovkhoses -- for seed and forage funds and also for creating all-state reserves. Thus the planning for procurement volumes is based upon an achieved level of production for the agricultural products and the planned rates of growth, while taking into account the need for satisfying the increasing requirements of the state, kolkhozes and sovkhoses with regard to the creation of insurance funds. In the process, priority importance is being attached to providing material-technical support for the kolkhozes and sovkhoses. Capital investments and mineral fertilizer deliveries determine for the most part the rates of growth for gross output and for the procurement of crop husbandry and livestock products.

The planning of procurements based upon the balance method makes it possible to take into account, in a more objective manner, the kolkhoz and sovkhos requirements for seed and feed. However, sufficient thought is not being given to soil fertility when planning procurements by oblasts, rayons and farms. The absence of a common methodology for obtaining a qualitative evaluation of land exerted an adverse effect.

A qualitative evaluation of land was carried out in a number of union republics and oblasts, which is taken into account when establishing plans for kolkhozes and sovkhoses for selling products to the state. Naturally, consideration is given at the same time to a farm's potential for specialized production. However, the establishment of a differentiated figure for grain sales to the state (with soil fertility taken into account), for all farms in an oblast, would undoubtedly lead to a disruption in existing specialization. The problem of planning and stimulating agricultural product procurements can only be resolved by taking into account the interests of both the kolkhozes and sovkhoses in the development of production and those of the state as a whole. A radical change in the planning of procurements can also bring about a disparity in the wages of kolkhoz members, cause financial difficulties on some farms and the earning of unjustifiably high incomes on other farms.

Certainly, the payments for products can be differentiated by organizing the procurement prices based upon a qualitative evaluation of the land.



However, such an opportunity would exist if the level of development was the same for all kolkhozes and sovkhoses. In addition to the fertility of the land, the profitability level of farms is also affected by the degree of fund availability. The results of studies have shown that the greater the amount of fixed capital available to farms, the higher will be their cropping power and productivity and the lower the production costs. Very important roles are also played by production specialization, material and technical support, personnel and so forth. It is apparent that a complex of measures must be taken into account and not just individual indices, as frequently happens when the economic processes taking place in agriculture are not studied adequately.

The establishment of scientifically sound agricultural crop procurement volumes for kolkhozes and sovkhoses requires first of all a qualitative evaluation of the land. The state budget of the USSR calls for annual appropriations for development of the land cadastre. However, we are of the opinion that this is completely inadequate, since agricultural crop procurements are influenced by a number of factors. For example, the degree of development of livestock husbandry at a particular farm brings about radical changes in the volume of sales of agricultural products to the state. Obviously, a determination as to the volume of products to be sold to the state must be based upon the overall bulk of marketable products and a qualitative evaluation of the land, with purchases of mixed feed from the state being taken into account. The importance of evaluating all kolkoz and sovkoz activity increases in particular when improvements are carried out in the economic methods employed for controlling agricultural production.

For example, an evaluation of the operations of a farm, based upon the sale of crop husbandry and livestock products to the state from an overall standpoint and excluding the cost of purchased feed, would furnish the base for developing a plan for agricultural product procurements. Certainly, an evaluation can be carried out based upon the sale of products to the state, in a conversion for grain, at grain and livestock husbandry farms.

These methods are not ideal. They were advanced at various times by certain economists. An important role is played here by the procurement prices. As is known, a high level of production profitability is ensured for grain crops and sunflowers and for potatoes, vegetables and milk -- a low level of profitability. And this holds true despite the increase which took place in procurement prices in conformity with the decisions handed down during the July (1978) Plenum of the CPSU Central Committee. The plan for 1980 called for 3.4 billion additional rubles to be used for these purposes. Moreover, as indicated above, the level of fund availability to a farm affects substantially the amount of profit and production profitability.

Improvements in planning can serve as a powerful means for raising the efficiency of agricultural production only when combined with improvements

with regard to taking into account plan fulfillment and the material stimulation of production. The decree recently adopted by the CPSU Central Committee and the USSR Council of Ministers entitled "Improvements in Planning and Intensification of the Action of the Economic Mechanism With Regard To Raising Production Efficiency and the Quality of Work," is directed towards ensuring that all administrative and planning work serve to raise the role played by the state plan and intensify the effectiveness of the economic levers and stimuli in the fulfillment of the planned tasks. This decision must serve as the basis for the development of a more improved model for controlling agricultural production in our country.

With regard to the existing system for stimulating procurements of agricultural products, it will become more and more incompatible with the tasks concerned with planning agricultural production and the requirements of society as further improvements are realized in controlling the economy.

The problem of stimulating an increase in the procurements of agricultural products requires thorough development of those questions concerned with the planning of production operations. It is our opinion that the material stimulation of kolkhozes and sovkhoses, for the purpose of increasing the production and procurements of agricultural products, should be carried out following an increase in output and in close association with planning and the consideration of such output in fulfillment of the national economic plan.

The stimulation of kolkhozes and sovkhoses towards increasing their production and procurements of agricultural products, over and above the established plans, will in any case be dependent upon the validity of the plans assigned to them. From a practical standpoint, such stimulation calls for incentives to be issued for increases in agricultural product procurements over and above the plan. Obviously, the most effective form of stimulation is that of issuing incentives for exceeding the achieved level of production. This is not a new proposal. It has been expressed by a number of economists. In some socialist countries, in the VNR [Hungarian People's Republic] for example, use is made of a system for stimulating increases in the sale of products. However, the conversion over to such a system of stimulation in the USSR requires thorough coordination with the procurement plan for agricultural products and with the system for providing material and technical support for the kolkhozes and sovkhoses.

It is our opinion that incentives should ideally be issued to kolkhozes and sovkhoses for having exceeded the achieved level of production, as an average for 5 years or for the three preceeding years. This will serve to smooth out the effect of unfavorable weather conditions. Naturally, the longer the period, the smaller the effect of the weather conditions on the cultivation of the agricultural crops. However, the effect of the increasing amount of material and technical support being provided for

agriculture will not be taken into account in the process. Hence the additional payment for the increase in agricultural product procurements must be coordinated with the procurement plan. Under these conditions, the kolkhozes and sovkhoses will be interested in undertaking tense plans for the procurement of agricultural products.

During the 1966-1978 period, the total amount of payments in the form of 50-percent bonuses added on to the procurement prices for the above-plan sale to the state of individual types of agricultural products, were as follows (in billions of rubles):

	1966-1970	1971-1975	1976-1978
Grain	3.7	4.0	2.8
Sunflowers	0.6	0.6	0.6
Sugar Beets	-	0.7	0.4
Raw cotton	0.8	1.2	1.1
Livestock and poultry	1.0	5.2	1.9
Milk	0.4	2.0	1.5
Other products	0.2	0.8	0.8
Total amount of bonuses	6.7	14.5	9.1
Ibid, in % of earnings from the sale of products to the state	3.3	5.1	4.5

An annual average of roughly 3 billion rubles is paid out in the form of a 50-percent bonus added on to the procurement prices for the above-plan sale of all types of crop husbandry and livestock products to the state. This amounts to 4.5-5 percent of the payments made for products sold by the kolkhozes and sovkhoses.

When converting over to issuing incentives for exceeding the achieved level, bonuses amounting to from 30 to 50 percent of the procurement prices should ideally be established for individual types of products. In this manner, the existing amount of payments for the above-plan sale of products to the state will be retained. However, the differentiation in the incomes of kolkhozes and sovkhoses which have achieved different levels of production intensification will be observed in the process. Farms possessing great opportunities for increasing the production and procurement of agricultural products by means of specialization and additional state investments will receive unjustifiably high bonus amounts. Kolkhozes and sovkhoses which achieve a high level of production intensification will be deprived of such a possibility. Prior to 1976, a system existed for issuing incentives for having exceeded the achieved level of procurements for raw cotton and sunflowers. The reason for converting over to issuing incentives for over-fulfillment of the plan derives from the argument raised by a number of farms that they no longer possess any potential for further increasing their production. Both economically strong and backward farms profit from

converting over to the issuing of incentives to a number of kolkhozes and sovkhoses for having surpassed the achieved level, with an increase in the procurement prices.

Computations have shown that the principal amount being paid out at the present time for above-plan sales of products to the state can be used for raising the procurement prices and establishing a bonus for exceeding the achieved level, such that neither the kolkhozes, sovkhoses nor the state sustain losses. If the procurement prices are raised an average of 3-3.5 percent, these prices can be raised to a greater extent for individual types of highly profitable products, kolkhoz and sovkhos income can be further redistributed, profitability can be leveled off for the various types of products and price differentiation -- can be leveled off for individual agricultural enterprises.

According to our computations, the bonus added on to the procurement prices for exceeding the achieved level should be established as no more than 10-15 percent. This amount of bonus is sufficient for arousing interest in the kolkhozes and sovkhoses in increasing the production and procurements of agricultural products. Under these conditions, the existing payments to kolkhozes and sovkhoses for products sold to the state will on the whole be retained.

However, we are of the opinion that a bonus can be paid out for an increase in output, with fulfillment of the national economic plan being taken into account. In such a case, the role played by national economic planning is raised. It seems to us that the bonus added on to the procurement prices for having exceeded the achieved level should be paid out only when the kolkhozes and sovkhoses have fulfilled or over-fulfilled their plans for selling products to the state. In the case of non-fulfillment of the national economic plans, this bonus could be paid out in a lesser amount, for example 5-10 percent instead of 10-15 percent.

The bonus added on to the procurement prices for exceeding the achieved level is obviously paid out taking into account fulfillment of the plan for selling products to the state by the kolkhozes and sovkhoses, for all grain crops on the whole and for each crop individually. The taking into account, in fulfillment of the plan, of the sale of individual crops in connection with non-fulfillment of the plan for gross yield of other crops, could be carried out in each specific instance at the discretion of the local agricultural and procurement organs. The payment of bonuses for exceeding the achieved level in the sale of livestock products can be carried out provided an increase takes place in the livestock capita in a conversion for conventional head. We believe that this will make it possible to develop production concentration and specialization on a more extensive scale.

In the work of improving economic stimulation, greater attention should be given by the specialists to those problems concerned with taking into



account the livestock purchased from the population, in fulfillment of the plan for procuring livestock products from kolkhozes and sovkhoses

In accordance with the existing method, the livestock purchased from the population by the kolkhozes and sovkhoses for fattening and maturing purposes are taken into account in their plans for selling products to the state. Moreover, this livestock is often sold by the kolkhozes and sovkhoses in the absence of fattening or maturing and a 50 percent bonus added to the procurement prices is paid out to the farms for the above-plan sale of livestock, despite the fact that the state does not actually receive additional meat resources.

For example, in 1978 the Kolkhoz imeni 1 May in Vyzhnitskiy Rayon of Chernovitskaya Oblast was thus paid 18,000 rubles, the Ukraina Kolkhoz in Rovenskiy Rayon of Rostovskaya Oblast -- 29,900 rubles and the Zhakushskiy Rayspetskhozob'yedineniye in Ural'skaya Oblast -- 142,400 rubles. The Aktyubinsk Meat Combine in the Kazakh SSR, in the presence of herd lists for heavy young cattle stock purchased from the population for delivery as transit goods, paid 41,300 rubles to the Komsomol'skiy Raymezhkhoz-ob'yedineniye. Unfortunately, many such cases can be cited.

Naturally, when incentives are issued to the kolkhozes and sovkhoses for having increased livestock sales to the state, compared to the achieved level, the farms will display greater interest in fattening animals purchased from the population.

The kolkhozes and sovkhoses, by purchasing livestock from the population and by means of fattening and maturing operations, can increase the country's meat production considerably. Towards this end, a portion of the forage grain or other products grown at kolkhozes or sovkhoses could be sold or issued to kolkhoz members or sovkhos workers at the expense of wages.

At the same time, a change should be introduced in the system for reflecting in the accounting procedures the pedigree cattle sold to other farms. For all practical purposes, pedigree cattle are considered in the livestock sales plan on two occasions: when sold and when purchased. Kolkhozes and sovkhoses which purchased pedigree cattle sell their beef cattle to the state with no overall reduction in their livestock capita.

It happens quite often that breeding cattle are not taken into account in the meat procurement plans. The consideration of breeding cattle in connection with fulfillment of the procurement plan would stimulate the farms into raising and selling greater numbers of these cattle. At the same time, such consideration would definitely lower the interest of the oblasts and republics in selling breeding cattle outside an oblast or republic, owing to the reduction that would take place in the meat resources. During the course of fulfilling or over-fulfilling the plans

for selling livestock to the state, the real meat resources are reduced by the number of breeding cattle considered in fulfillment of the plan. In this regard, an increase in the sale of meat by those oblasts and republics which purchase breeding cattle can create an additional stimulus for increasing meat production throughout the country.

From the Editorial Board. It is obvious that the subjects touched upon in this article, in our opinion, will not solve all of the problems associated with material stimuli for increasing the production and procurements of agricultural products. Some of them are clearly controversial and require further study and understanding. The principal task of this present article is that of attracting the attention of a broad range of specialists to implementing the decisions handed down during the July(1978) Plenum of the CPSU Central Committee, with regard to further raising the efficiency of agricultural production. It is the hope of the Editorial Board that the readers of the journal will participate actively in discussions of the subjects touched upon. This will aid the planning, agricultural and financial organs in developing a more improved system for planning and material stimulation in agriculture.

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## PROGRESS, PROBLEMS IN CHEMICAL SERVICE IN BELORUSSIA

### Problems, Progress Discussed

Minsk SEL'SKOYE KHOZYAYSTVO BELORUSSII in Russian No 11, Nov 79 pp 2-3

[Article: "A Single Chemization Service"]

[Text] Each year the flow of mineral fertilizers, chemicals for protecting plants and animals from disease and pests as well as liming materials, feed supplements and other chemical products increases to the village. As a result kolkhozes and sovkhoses are receiving a powerful base for the continued intensification of agricultural production and for raising the productivity of fields and farms. However, in order to make full use of this base it is essential to skilfully utilize the growing arsenal of means of chemization in production and to solve problems in all their complexity.

Unfortunately, these resources are not yet being utilized properly and efficiently everywhere and the expected return on them is not being achieved. As we know, previously the questions of chemization in agriculture and the radical improvement of lands were dispersed among different departments. For example, monetary resources for increasing the fertility of lands were allocated by the state to agricultural organizations, whereas material-technical resources were located within Goskomsel'khoshtekhnika [State Committee of the Agricultural Equipment Association]. In the rayon the administration of agriculture of the rayon executive committee oversaw the distribution of peat, lime and resources from the state budget, but Goskomsel'khoshtekhnika, in addition to the enterprises themselves, realized the delivery and application of the materials. The existing order resulted in the fact that the monetary resources allocated by the state were not always utilized according to the purpose for which they were earmarked. The existing order of peat distribution resulted in the fact that most of the resources for raising the fertility of the soil were utilized by economically-strong enterprises. Plans for its delivery to economically-weak enterprises were not fulfilled.

In order to bring order to the field of chemization of agriculture, the Central Committee of the CPSU and the Soviet government passed a resolution entitled, "On Creating a Single Specialized Agrochemical Service in the

Country." This resolution recognizes the necessity of organizing an All-Union Production-Scientific Association for the Agrochemical Servicing of Agriculture (Soyuzsel'khozkhimiya) within the system of the USSR Ministry of Agriculture. The association is being created on the basis of the subdivisions of the USSR Ministry of Agriculture and USSR Goskomsel'khoztekhnika, which deals with questions of the chemization of agricultural production. The single system of agrochemical services is to include, on a cost-accounting basis, production-scientific associations in union republics, production associations in autonomous republics, krais, oblasts and rayons and chemization points in enterprises. It will also include agrochemical laboratories, stations for plant protection and scientific-research institutions.

Soyuzsel'khozkhimiya and its services locally are called upon to secure the scientifically-based utilization of mineral and organic fertilizers, of chemical and biological means of plant protection, feed supplements, growth substances and other means of chemization of agriculture in kolkhozes, sovkhoses and other state agricultural enterprises.

Based on this, it is planned that the association Soyuzsel'khozkhimiya will secure:

--the preparation of proposals on the future development of chemization in agriculture, the development of drafts of annual and five-year plans for the economic and social development associated with chemization in agriculture, including establishing (on the basis of data of corresponding research) the needs of kolkhozes, sovkhoses and other state agricultural enterprises for mineral fertilizers, for chemical and biological means of plant protection, for liming and gypsum-containing materials, for feed supplements, for polymer film and other chemical products and in technology for their use, the development of composite orders for these material-technical resources in order to present them in the proper order to USSR Gosplan, USSR Gosstnab as well as to ministries and departments-suppliers;

--the supply of kolkhozes, sovkhoses and other state agricultural enterprises with mineral fertilizers, chemical and biological means of plant protection, soil developers, feed supplements, film as well as other chemical products;

--the organization of extraction operations for peat, local limestone and gypsum-containing materials, the fulfillment (according to contracts with enterprises) of operations to raise the productivity of lands and to chemically develop soils, to apply mineral fertilizers to the soil, to mix mineral fertilizers, to ship and apply organic fertilizers to the soil, the treatment of agricultural crops with chemical and biological means of plant protection and service by agricultural aviation;

--the realization of measures on the organization of enterprise (inter-enterprise) chemization points in kolkhozes and sovkhoses, the development of inter-enterprise cooperation in the building of storehouses for mineral



fertilizers and chemical means of plant protection, of air strips, of agrochemical and biological laboratories and other facilities for the production base of chemization in agriculture;

--the carrying out of soil-agrochemical research in kolkhozes, sovkhoses and other state agricultural enterprises as well as an analysis of feed quality and the quality of other agricultural products, the issuance to enterprises of planning-budget documentation on the effective utilization of chemicals in farming, animal husbandry and feed production, the study and introduction into agricultural production of scientific and technical achievements and leading practices on agrochemical service;

--the organization of timely measures to combat pests and diseases of agricultural plants and the use of chemicals to destroy weeds;

--the realization of state controls over the implementation by all land-users of the recommended measures to combat pests and diseases of agricultural crops and weeds, over the quality-fulfillment of this work, over the strict observance by kolkhozes, sovkhoses and other agricultural enterprises of the established regulations for utilizing pesticides;

--the realization of controls over the quality and timely delivery to agriculture of chemicals, over the reliability of accounts and reports on their use in kolkhozes, sovkhoses and other state agricultural enterprises, over the observance of all measures to conserve the environment from pollution with pesticides and fertilizers by all land users;

--the organization of training and retraining of specialists and cadres of mass professions on the chemization of agriculture and plant protection.

It was recognized as necessary to transfer to the management of the corresponding organs of the Soyuzsel'khozkhimiya system all enterprises and organizations within the system of USSR Goskomsel'khoztekhnika and the USSR Ministry of Agriculture which realize the agrochemical service of agriculture--agrochemical associations, agrochemical centers, special departments, planning-research stations on chemization of agriculture, agrochemical laboratories, rayon agrochemical centers, mechanized detachments, production and other enterprises and organizations which perform work in this area, as well as facilities of the production-technical base earmarked for the needs of chemization in agriculture and the agrochemical service to kolkhozes and sovkhoses and scientific-research organizations and planning institutions performing work on the thematic and profile of operations of the agrochemical service.

Special attention should be given to the selection and most rapid manning of all links in the Sel'khozkhimiya service utilizing highly-trained cadres capable of successfully operating the chemization service to agriculture and of raising its effectiveness.

In creating a new service that meets modern needs for the intensification of kolkhoz and sovkhos production, it is important to preserve and increase the positive experience that has already been acquired.

The republic association, Sel'khozkhimiya, has a rich arsenal of technical resources. The growth of the work volume in the agrochemical service of kolkhozes and sovkhoses must be secured through the continued technical reequipping of mechanized detachments, through job specialization, through a complex approach to the introduction of modern technology, through the year-round operation of machines and mechanisms and their highly-productive utilization.

The high level of technical equipment of mechanized detachments enables them to successfully lime acid soils. During the current five-year plan alone this work has been completed on 3.65 million hectares. As a result, as the analysis of the fourth round of soil-agrochemical research indicates, during the last 5 years the quantity of average and very acidic soils in the republic decreased by 23 percent.

Each year more and more pulverized materials are utilized for liming. Whereas in 1970 only 900,000 tons of dolomite meal were applied, last year 4 million tons or 64 percent of all liming materials applied consisted of dolomite meal.

In 84 rayons of the republic storehouses of the silage type with a total capacity of 195,000 tons have been built to store or process dolomite meal. Their turnover factor is 10-15 times, as compared with the planned 5 times. Pulverized materials are applied using 790 mobile ARUP-8 spreaders and 11 RUP-8 tractor spreaders.

In many rayons a flow-line industrial technology of liming acid soils using pulverized materials has already been introduced. In this case the ARUP-8 specialized vehicle simply transports the dolomite meal to the field. It is then pumped into the RUP-8 tractor spreader, which applies the liming material to the soil. Five or six ARUP-8 specialized vehicles are needed to service one tractor spreader. All pneumatic spreaders and specialized vehicles are concentrated in rayons where storehouses of the silage type are available. With this type of technology productivity improves significantly, the cost of liming decreases, quality improves and technological processes are fulfilled regardless of the weather conditions. Good experience in the use of the ARUP-8 pneumatic spreader has been gained in many rayons of Grodnenskaya and Vitebskaya oblasts. Unfortunately, in many rayons of Brestskaya, Minskaya and Mogilevskaya oblasts spreaders are not yet used to full capacity. Moreover, some directors tolerate cases in which the ARUP-8 specialized vehicles are utilized as towing vehicles for transport operations.

The republic's grain farmers have serious complaints against the Belorussian Railroad. It frequently delivers liming materials in tank cars--cement

carriers which cannot be completely unloaded because of the state of disrepair of the air plates, air trays and air mains and because of the absence of seals in the access holes. The pulverized fertilizer residue not unloaded by the pneumatic method reaches from 0.2 to 20 tons. It must be removed manually. As a result an additional 2 hours are spent on each tank car.

Sometimes there are cases in which the pulverized fertilizer is shipped in hopper-type cars, which on many bases of the rayon sel'khoztekhnika association cannot be unloaded into a storehouse but only onto an open platform. This means additional expenses. A "batch-like" boxcar delivery is tolerated without the observance of daily norms. Because of this the boxcars remain idle for long periods of time.

Within the complex of agrochemical measures an important role is given to increasing the contours in fields and to raising the fertility of poor hay and pasture lands. In the republic's kolkhozes and sovkhoses there are about 3.5 million hectares of such lands. The largest proportion is found in the enterprises of Brestskaya and Gomel'skaya oblasts, where per each 100 hectares of agricultural lands there are 43-44 hectares of low-fertility pasture lands producing no more than 6-8 quintals of feed units per hectare.

At the present time work is being done everywhere to radically improve feed lands. We should give attention to the experience accumulated in Rogachevskiy Rayon concerning preparing land areas for pasture. This is done in the following manner. During the winter machine operators root out stumps and lime acid soils and bring in the required amount of organic fertilizer. With the arrival of good conditions the land is plowed up, and disced and composts and mineral fertilizers are applied, with a subsequent packing using the BDT-7 disc harrow. Then the area is levelled, packed and submitted to the rayon's enterprises for grass sowing. During the last 3 years this method was used to improve 1,900 hectares of low-productivity lands. On them farmers now produce 40-45 quintals of feed units per hectare.

The July 1978 Plenum of the CPSU Central Committee placed great and responsible goals before village workers. This is well understood by the workers of the Sel'khozkhimiya service. In the future they must increase the volume of work on rendering aid to farmers in order to make their worthy contribution toward strengthening agricultural production in the republic.

#### Working Toward Unified Service

Minsk SEL'SKOYE KHOZYAYSTVO BELORUSSII in Russian No 11, Nov 79 pp 2-3

[Article by M. G. Kudreyko, chairman of the republic's production-scientific association of Belsel'khozkhimiya, deputy minister of agriculture of the BSSR: "The Agrochemical Service of the Republic"]

[Text] At the July 1978 Plenum of the Central Committee of the CPSU Comrade L. I. Brezhnev noted that for all practical purposes the country as yet does not have a unified, scientifically-organized system for providing agrochemical services to kolkhozes and sovkhozes. For this reason chemization is the concern of Sel'khoztekhnika and inter-enterprise associations, or perhaps in a few areas this important matter is left unattended. In order to bring order it is expedient to concentrate the agrochemical service both centrally and locally within the system of agricultural organs, transferring to them the production base that was earmarked for it.

In fulfilling the decisions of the plenum, the Central Committee of the CPSU and the USSR Council of Ministers recently passed a resolution entitled, "On Creating a Single Specialized Agrochemical Service in the Country." On the basis of the subdivisions of the ministry of agriculture and Goskomsel'khoztekhnika we in the republic have organized the Republic Production-Scientific Association on the Agrochemical Service to Agriculture (Belsel'khozkhimiya). It is composed of republic laboratories on the quality of fertilizers and poisonous chemicals, stations on the biological method of plant protection and a laboratory for predicting and diagnosing pests and diseases of agricultural crops.

Each oblast and rayon has created oblast and rayon divisions of Sel'khozkhimiya which are composed of the organizations and enterprises of the ministry of agriculture and of Goskomsel'khoztekhnika that were indicated in the resolution. The republic association and its subordinate cost-accounting subdivisions comprise a single system of agrochemical services.

Having concentrated all of the aspects of management of the agrochemical service in its own hands, the new association will determine the needs of enterprises regarding chemical resources and it will control their quality and scheduled delivery. It will be involved in the development of scientifically-based recommendations on the utilization of means for plant protection, of measures to combat pests and diseases of agricultural crops, to extract peat for fertilizer, to transport and apply mineral and organic fertilizers in the soil as well as liming materials. It will be involved in many other operations that are directed at increasing the productivity of all agricultural crops.

Essentially, this is the first time in the country that a centralized agrochemical service has been created to work directly and only with agriculture. In the area of agrochemistry the interests of producers and scientists are closely linked.

Ten years ago the time became ripe to organize specialized departments on mechanized operations and the chemical protection of plants. Such special departments were created (1969-1970) within the system of Sel'khoztekhnika in accordance with the decision of the party's central committee and the government of this republic. In a short time they developed into solid



enterprises. The work that has been done had a positive effect on curtailing the schedule for the application of mineral and organic fertilizers, on the normalization of acidity in soils and on decreasing losses of agricultural production due to pests, diseases and weeds.

Suffice it to say that many specialized associations increased their service volume in agrochemical jobs by over 5 times in just one five-year plan. These include the Gorodishchenskoye Division of Baranovichskiy Rayon, the Belovezhskoye of Kamenetskiy, the Gorodeyskoye of Nesvizhskiy, the Ponemunskoye of Grodnenskiy, the Radunskoye of Boronovskiy and several others. However, in rayons where the subdivisions were poorly organized technology was utilized much more poorly and schedules were not adhered to for the liming of acid soils and for other important operations. This type of situation developed in Mogilevskaya Oblast.

The organization of a new single agrochemical service enables us to increase the volume of agrochemical operations, to put the utilization of chemicals on a scientific basis and to concentrate all existing services and technology in rayons and oblasts of the republic. This will undoubtedly play a role in raising the quality of farming, in raising land fertility and in increasing productivity.

In the new system the ARUP-8, KSA-3, ammonia spreaders, trucks and other vehicles will be utilized only according to their purpose. Storehouses and chemization bases will be emptied. Today many of them are stocked with all kinds of things, but not with fertilizers. It will become possible to more efficiently unload mineral fertilizers onto specially-equipped platforms. Losses will decrease, labor expenditures and the cost of operations will be lowered.

Among the priority tasks is the building in 19 rayons of storehouses for mineral fertilizers near railroad tracks. In 12 rayons it is essential to create associations of Sel'khozkhimiya with production bases to house mechanized detachments and technology. Here it is very important to maintain cadres of machine operators and especially of drivers of vehicles and to create normal conditions for work and rest.

Today many independent specialized divisions do not have appropriate production bases and are located in buildings that have not been adapted to their needs, although 10 years have passed since the divisions were organized. Thus, in Brestskaya obl'sel'khoztekhnika it will be necessary to build six production bases and to reconstruct one, in Vitebskaya--to build seven and renovate two, in Gomel'skaya--to build 11, in Grodnenskaya--to build four and renovate four, in Minskaya--to build 12 and renovate 2, and in Mogilevskaya--to build 13 and renovate three.

During the first years following the organization of Sel'khoztekhnika the basis for turnover of the supply bases was machines, spare parts and fuel and oil materials. Mineral fertilizers usually were delivered directly to the enterprises. Many manpower and material resources were expended for

their delivery to kolkhozes and sovkhoses. Boxcars used to remain idle with their loads waiting to be unloaded. As a result mineral fertilizers were unloaded onto open, usually inappropriate platforms.

The freight turnover of supply bases has increased and its structure has changed significantly. In 1978, for example, the delivery of means of chemization comprised 11.08 million tons as compared with 0.3 million tons in 1962. The storehouse base has been strengthened significantly too.

At the present time the republic has created 97 supply bases near railroad tracks. Forty-one bases are located on separate platforms and the rest occupy areas that include storehouses housing spare parts and other materials. They have common access roads, a common territory, etc. Storehouses for pulverized fertilizers and liming materials have been built at 84 railroad stations. The availability of these important facilities has enabled us to make the transition to an essentially new technology for liming acid soils using agents of high quality.

With the growth of energy supplies and with an increase in the level of mechanization specific expenditures for processing freight are decreased. Already last year no more than 0.93 rubles were expended for each ton of freight.

Recently most places in the republic have introduced a scientifically-based technology for liming acidic soils using pulverized materials with the aid of RUP-8 spreaders in units with T-150 K tractors. Materials are delivered by ARUP-8 vehicles, reloaded onto the RUP's and immediately applied to the soil. This technology enabled us to double labor productivity, to decrease losses to a minimum, to significantly improve work quality and most importantly, to complete operations during any type of weather and at any given time of the year.

As the experience of many years shows, the concentration of special highly productive machinery and units, their year-round use, a complex approach to introducing modern equipment, full-capacity and efficient utilization of technology--all of this encourages the coordinated work of mechanized detachments.

Liming is the most important condition for raising soil fertility and the effectiveness of fertilizers. Numerous field experiments conducted by scientific-research institutions and agrochemical laboratories in the republic have shown that the average increase in yield of agricultural crops due to liming is: grains--3.0; sugar beets--2.3; potatoes--18.3; clover (hay)--20.4; flax (straw)--4.5 quintals per hectare.

Liming has a positive effect on raising the effectiveness of mineral fertilizers, especially nitrogen. For example, the return on 1 kilogram of nitrogen doubles on barley fields where the soil is optimally acidic. The return on potassium fertilizers also increases by 20-30 percent. Liming improves the phosphate regiment of the soil and as a result phosphorus is more fully utilized by the plant.

In the republic acidic soils have been limed since 1962. The first series was completed in 1970. During this period 4.5 million hectares of plowland were limed with an average dose being 1.0-2.6 tons per hectare. In subsequent years soil acidity was neutralized on over 1 million hectares, each of which received an average of 3.3-4.7 tons of calcareous fertilizers. As a result it was possible to halt the continued acidity of the soil and to significantly decrease the acidity of plowlands. The average acidity indicator (pH) for arable land changed from 4.95 to 5.2 during this period.

Calculations made by the Belorussian NII [Scientific Research Institute] of Soil Science and Agrochemistry indicate that expenditures for liming are repaid in 2-3 years and clear income from it comprises over 5 million rubles annually. In order to achieve the planned productivity for agricultural crops by the end of the five-year plan, and especially for grains (29-32 quintals per hectare), it is essential to eliminate surplus acidity and to bring the pH value to 5.7-5.8 on the average for the republic.

During the current five-year plan agriculture in the republic will utilize 28.1 million tons of mineral fertilizer (in unit accounts), 33.6 million tons of liming materials, 82,000 tons of chemicals to protect plants and 1,100,000 tons of feed supplements. Expenditures for the acquisition of the means of chemization, for their shipment, storage, and preparation for application in the soil comprises about 385 million rubles. For this reason the effectiveness of capital investments depends primarily on the level of development of the agrochemical service and on the organization of jobs in kolkhozes and sovkhozes.

Until now the station on chemization and plant protection as well as the mechanized detachments of Sel'khoztekhnika were found in different departments and in reality did not carry the necessary responsibility for securing the planned productivity. For this reason the effectiveness of the means of chemization was not high enough. Thus, the return on 1 kilogram of active mineral fertilizer on grain in 1975 was 4.2 kilograms, in 1976--5.9, in 1977--5.2 and in 1978--5.6 kilograms.

Fertilizer losses are still great (12-14 percent of the total amount). Its shipping, transfer and reloading have not yet been organized. Mineral fertilizers are stored in unsuitable facilities and pits covered by panels, straw or peat and sometimes under the open sky. This occurs despite the fact that the total capacity of the central storehouses of the Goskomsel'khoztekhnika is 1,200,000 tons. The existing facilities are utilized only by 43 percent because they are filled with spare parts and other materials.

Many enterprises violate the technology of utilizing fertilizers. Even for the main crops (grains, flax, sugar beets, potatoes) the fertilizer doses do not always correspond to the technological documentation. This results in the acute violation of the ratio of nutrients and in the final analysis decreases the return of mineral fertilizers because of their unproductive waste. For example, in Berezinskiy Rayon over 380 kilograms of mineral

fertilizers in active substances and 60 tons of compost were applied to potatoes, but the yield here did not exceed 118 quintals per hectare (a yield of 150-180 was planned).

There have been violations of the scientifically-based distribution of fertilizers to administrative-economic rayons. All of this increases the variegation of the soil. Some fields have a shortage of phosphorus and potassium, others--a surplus. This problem requires the most attentive approach and the quickest solution.

There is a serious battle against pests and diseases of agricultural crops and against weeds. But the damage that is done by them is still great. The results of research show that the chemical treatment of grain crops yields an increase of up to 3 quintals of grain per hectare. However, in most cases herbicides are utilized without consideration of economic effectiveness. The elimination of weeds is only one link among the measures impeding harvest losses. A phytosanitary evaluation of crops in the republic shows that root rot and blights are found on significant areas, resulting in great losses.

The efficient utilization of the means of chemization is impossible without the organization of complex services to agriculture. For this reason it has become extremely necessary to create a better organized organizational-technical service. It will secure a more efficient fulfillment of the entire complex of operations to store, ship, reload and apply mineral fertilizers, to lime acidic soils and to utilize the means of plant protection on the basis of introducing progressive technology with the utilization of electronic-computer technology and the means of operative communications.

The production base of the associations is comprised of enterprise and inter-enterprise points of chemization, fertility detachments, mechanized detachments, specialized departments on chemical operations, agrochemical centers, railroad storehouses with access roads and other facilities that had been within the system of Goskomsel'khoshtekhnika. In order to accelerate the development of a material-technical base in cities and rayons it is planned to utilize the resources of the state budget as well as to enlist the resources of kolkhozes and sovkhoses on the basis of inter-enterprise cooperation.

In the republic, especially in Vitebskaya, Mogilevskaya and Gomel'skaya oblasts, it is essential to give the most serious attention to conducting cultivational-technical operations, to preparing pastures for grass sowing or resowing and to improving infertile soils. For example, in Rogachevskiy Rayon the Sel'khozkhimiya production association applied 111,000 tons of organic fertilizers and 180 tons of mineral fertilizers during 9 months. Significant areas were plowed, disced, limed, de-stumped and levelled. The detachment has six T-150K tractors, two K-700 tractors, a loader, a bulldozer-stump puller, trailers, spreaders of liquid and granulated organic fertilizers, disc harrows, plows and other equipment. The yield of grasses on the areas prepared by the fertility detachment was an average of



150-170 quintals per hectare, and the economic effectiveness in six enterprises in the rayon reached almost 40,000 rubles.

Since the new service will be fully responsible for the scientifically-based utilization of chemicals, a special council will be created within Belsel'khozkhimiya. It will be composed of the management workers of the association, the directors of scientific-research and planning institutes involved with questions of chemization. The council will examine future and current plans, reports on production-economic activities regarding the fulfillment of important goals, questions of the scientific organization of labor and production, recommendations, promising technology and other questions related to agrochemical services to kolkhozes, sovkhoses and other agricultural enterprises.

Agricultural administrations, ispolkoms of oblast and rayon soviets of workers' deputies and oblast and rayon associations of Sel'khozkhimiya should make sure that each machine operator, driver or specialist moving into a new organization is not penalized in wages or living conditions. All associations of Sel'khozkhimiya need universal aid and attention, for this matter is one that is of great state importance.

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## MEAT INDUSTRY TOTALS FOR 9 MONTHS OF 1979

Moscow MYASNAYA INDUSTRIYA SSSR in Russian No 12, Dec 79 pp 15-17

[Article by N. M. Yesin, Ministry of the Meat and Dairy Industry, USSR:  
"Concise Summary of the Work of the Meat Industry During 9 Months of 1979"]

[Text] During January-September 1979 12.3 million tons of livestock and poultry were procured, which is 107,000 tons less than the amount procured during the same period in 1978.

In most union republics as well as in the country as a whole during 9 months of the current year the growth pace of the procurement of livestock and poultry decreased in comparison with the annual plan in connection with the insufficient growth of the livestock herd in kolkhozes and sovkhoses, with its low productivity, with the unsatisfactory course of livestock procurement from the population and with the decrease in the marketable surplus in agriculture as concerns meat production.

The fulfillment of the annual plan of livestock procurement is proceeding successfully only in the Georgian SSR, the Azerbaijan SSR and the Moldavian SSR.

The greatest lags in livestock procurement have been observed in the RSFSR, the Ukraine, Lithuania, Latvia, Kirgizia and Estonia.

Livestock was delivered for industrial processing with significant lags in the September schedule (plan fulfillment was 87 percent). There was an underdelivery of 248,000 tons of livestock as compared with the schedule. In the RSFSR the livestock delivery schedules are especially poorly adhered to. Of the total number of production associations in the meat industry only seven were able to deliver livestock in the volume that was indicated by the schedule.

The plan for inter-republic livestock deliveries for 9 months of 1979 was fulfilled by 89 percent. The following deliveries of livestock were not completed: from the RSFSR to the Ukrainian SSR; from the Ukrainian SSR to the Georgian SSR, the Azerbaijan SSR and the Armenian SSR; from the Uzbek SSR to the Tadzhik SSR; from the Kazakh SSR to the RSFSR, the Uzbek SSR and the Kirgiz SSR; from the Kirgiz SSR to the Kazakh SSR.

Table 1

(1) Министерства мясной и молочной промышленности	(2) Мясо				(3) Мясо птицы				(4) Колбасные изделия				(5) Мясные полуфабрикаты			
	(6)		(7) Фактически выработано		(6)		(7) Фактически выработано		(6)		(7) Фактически выработано		(6)		(7) Фактически выработано	
	План, тм. т	Тм. т	(8)	%	План, тм. т	Тм. т	(8)	%	План, тм. т	Тм. т	(8)	%	План, тм. т	Тм. т	(8)	%
СССР (11)	6354	6069	95.5	100.7	427.7	444.7	104	106.5	2195	2156	98.2	100.3	895	877	98	105.3
12. РСФСР	3295	2990	90.7	100.8	243.1	256.4	105.4	105.3	1333	1289	96.7	99.4	534	516	96.6	104.2
13. Украинской ССР	1475	1509	102.3	104.1	97.9	103.1	105.3	108.8	442	445	100.6	101.6	148.7	149.3	100.4	109.1
14. Белорусской ССР	404.5	408.2	100.9	101.1	18.03	19.5	108.3	109.6	86.6	88.3	102	105.1	41.9	41.3	98.6	111.6
15. Казахской ССР	78.3	77.7	99.2	103.6	0.13	0.23	182	109.6	36.4	37.4	102.7	108.1	15.1	16.4	108.6	113.9
16. Узбекской ССР	365.7	355.6	97.2	96.9	19.5	19.7	100.9	110.6	84.6	81.5	98.7	101.1	37.9	35.6	96.6	104.6
17. Туркменской ССР	47.3	44.5	105.2	105.5	0.93	0.05	10.5	32.8	19.8	20.6	103.6	104	11.7	12.1	103.4	109
18. Азербайджанской ССР	39.4	39.2	99.5	99.7	—	—	—	—	17.9	17.9	100	103.5	9.6	9.9	103.1	97.1
19. Грузинской ССР	223.8	221.1	98.8	92.3	12.7	13.2	104.5	91.1	42.8	43.6	101.9	101.9	24.5	24.1	98.4	100.8
20. Молдавской ССР	103	93.6	90.9	111.3	10.6	11.7	107.7	120	21.2	18.7	88.2	91.7	11.8	11.7	88.2	96.9
21. Латвийской ССР	108.2	109.6	101.2	85.6	11.7	11.9	102.4	105.3	34.2	34.9	102.4	101.7	20.8	21.2	101.9	95.9
22. Литовской ССР	49.2	49.9	101.4	97.7	1.03	1.1	107.4	69.3	11.75	11.8	100.4	101.7	8	7.95	99.4	106.5
23. Эстонской ССР	29.9	28.4	95	100.4	4.29	4.02	106.8	134	9.6	9.95	101.5	102.1	5	4.9	98	109.5
24. Финляндской ССР	27.4	28.8	105.2	104.3	0.2	0.2	11.8	192	13.5	13.8	103.2	102.2	8.1	8.4	103.7	127.5
25. Венгерской ССР	20.6	19.6	95.1	101	1.03	1.23	119.7	101.2	8.9	8.7	97.8	98.9	2.5	2.7	108	103.6
26. Чехословацкой ССР	89.0	91.8	103.1	92	6.12	6.9	112.3	106.2	31.1	31.5	101.3	100.2	16.4	16.2	98.8	102.5

Key to Table 1:

1. Ministries of the meat and dairy industries
2. Meat
3. Poultry meat
4. Sausages
5. Semi-finished meat products
6. Plan, thousands of tons
7. Actual production
8. Thousands of tons
9. Of plan
10. Compared to 1978
11. USSR
12. RSFSR
13. Ukrainian SSR
14. Belorussian SSR
15. Uzbek SSR
16. Kazakh SSR
17. Georgian SSR
18. Azerbaijan SSR
19. Lithuanian SSR
20. Moldavian SSR
21. Latvian SSR
22. Kirgiz SSR
23. Tadzhik SSR
24. Armenian SSR
25. Turkmen SSR
26. Estonian SSR

Continuation of Table 1

(1) Министерство масло и молочной промышленности	(2) Жир пищевой топленый				(3) Консервы мясные				(4) Еда и животные корма				Результаты по 1978 г.
	(5) план, тис.	(6) фактически выработано	(7) %		(10) план, тис.	(6) фактически выработано	(8) %		(5) план, тис.	(6) фактически выработано			
			(7) тис.	(8) 1978 г.			(7) тис.	(8) 1978 г.		(7) тис.	(8) 1978 г.		
												(7) тис.	
СССР (13)	267.2	256.5	96	99	426	429.6	100.8	112.6	362	350.8	97	102.4	101.5
РСФСР (14)	130	116.7	89.8	99.9	196.9	196.1	99.6	119	191.5	177.3	92.6	100.9	100.8
Украинской ССР (15)	69.8	71.8	102.8	100.6	62.1	65.9	106.1	113.6	82.5	84.9	102.9	106.5	103.8
Белорусской ССР (16)	19.1	19.4	101.5	101	21.5	21.5	100	116.8	20.3	20.6	101.8	104	104.7
Узбекской ССР (17)	2.94	3.2	108.7	115.6	—	—	—	—	4.3	4.49	104.3	106.9	105.7
Казахской ССР (18)	14.4	14.2	98.9	97.3	92.9	92.1	99.1	101.4	20.9	21.3	101.6	101.3	100.4
Грузинской ССР (19)	1.44	1.34	92.8	106.8	—	—	—	—	2.2	2.33	103.7	103	106.8
Азербайджанской ССР (20)	0.8	0.87	109.1	104.7	—	—	—	—	1.9	1.91	100.3	123	108.7
Литовской ССР (21)	11.4	11.5	101.5	85.4	5.5	5.63	102.4	100.5	10.37	10.5	101.5	97.3	96.3
Молдавской ССР (22)	5.4	5.2	93.6	111.8	6.7	7.3	109	109.3	5.35	5.6	87.8	109.8	109.2
Латвийской ССР (23)	4.7	4.9	104.1	82.9	5.6	5.7	101.6	98.3	5.3	5.6	102.2	90.9	87.7
Киргизской ССР (24)	1.49	1.491	100.1	94.5	20.9	20.89	100	113.4	2.42	2.44	101	81.5	102.9
Таджикской ССР (25)	0.87	0.86	99	94.5	3.22	3.25	100.9	95.6	1.74	1.8	85.6	102.2	102.9
Армянской ССР (26)	0.74	0.75	101.2	101.2	4.4	4.7	106.8	127	1.81	1.8	99.8	103.1	110.3
Туркменской ССР (27)	0.54	0.49	101.2	101.2	0.75	0.78	108.8	101.3	0.9	0.83	91.5	143	101.8
Эстонской ССР (28)	3.6	3.79	104	81.6	5.45	5.6	102.6	100.7	3.6	3.7	101.6	100.7	94.4

Key to Continuation of Table 1:

1. Ministries of the meat and dairy industries
2. Rendered edible fat
3. Canned meat
4. Dry animal feeds
5. Plan, thousands of tons
6. Actual production
7. Thousands of tons
8. Of plan
9. Compared to 1978
10. Plan, millions of standard cans
11. Millions of standard cans
12. Product sales, percent of 1978
13. USSR
14. RSFSR
15. Ukrainian SSR
16. Belorussian SSR
17. Uzbek SSR
18. Kazakh SSR
19. Georgian SSR
20. Azerbaijan SSR
21. Lithuanian SSR
22. Moldavian SSR
23. Latvian SSR
24. Kirgiz SSR
25. Tadzhik SSR
26. Armenian SSR
27. Turkmen SSR
28. Estonian SSR

Table 2

(1) Министерства мясной и молочной промышленности	Рост относительно января-сеп. (2) тьяри 1978 г., %	
	(3) валовой продукции	(4) выработка на одного работавшего
СССР (5)	100,8	99,4
в том числе мясная промышленность (6)	101,6	100,2
РСФСР (7)	101,4	99,8
Украинской ССР (8)	104,1	102,2
Белорусской ССР (9)	103,1	102,3
Узбекской ССР (10)	106,8	105,2
Казахской ССР (11)	98,8	98,5
Грузинской ССР (12)	106,6	106,8
Азербайджанской ССР (13)	107,5	102,1
Литовской ССР (14)	94,8	95,8
Молдавской ССР (15)	105,5	100,5
Латвийской ССР (16)	88,2	91,0
Киргизской ССР (17)	100,5	96,7
Таджикской ССР (18)	101,9	102,2
Армянской ССР (19)	109,7	101,7
Туркменской ССР (20)	100,1	100,5
Эстонской ССР (21)	91,9	95,1

## Key to Table 2:

- |   |                    |
|---|--------------------|
| 1. Ministries of the meat<br>and dairy industries | 11. Kazakh SSR     |
| 2. Growth compared to January-<br>September 1978  | 12. Georgian SSR   |
| 3. Of gross production                            | 13. Azerbaijan SSR |
| 4. Output per 1 worker                            | 14. Lithuanian SSR |
| 5. USSR   | 15. Moldavian SSR  |
| 6. Including the meat industry                    | 16. Latvian SSR    |
| 7. RSFSR  | 17. Kirgiz SSR     |
| 8. Ukrainian SSR                                  | 18. Tadzhik SSR    |
| 9. Belorussian SSR                                | 19. Armenian SSR   |
| 10. Uzbek SSR                                     | 20. Turkmen SSR    |
|   | 21. Estonian SSR   |

In January-September 1979 fattening enterprises and enterprises of the ministry delivered 60,700 tons of weight gain due to fattening, pasturing and raising of livestock. This is 7 percent more than during the same period in 1978. The average weight of cattle after fattening was 361 kilograms; of hogs--130 kilograms.

As of 1 November 1979 there were 746,000 tons of livestock scraps in procurement organizations and industrial enterprises as compared with 903,000 tons during the same period in 1978. Livestock scraps decreased by 157,000 tons (by 18 percent) on bases of livestock-procurement organizations, including by 20 percent in the RSFSR.



Because of the shortage of raw materials a serious situation has developed in fulfilling the annual plan for the production of meat, rendered edible fat, dry animal feeds and gelatin. The actual growth pace for the production of sausages, semi-finished meat products and bone glue does not secure the fulfillment of the annual plan.

Data on the production of meat, meat products, dry animal feeds and labor productivity are presented in Tables 1 and 2.

A resolution of the CPSU Central Committee and the USSR Council of Ministers for USSR Minmyasomolprom [Ministry of the Meat and Dairy Industry] for 1979 established goals for the production of feather-down articles, edible gelatin and toothbrushes. During 9 months of 1979 feather-down articles worth 89.7 million rubles, 3,047 tons of food gelatin and 431,500 toothbrushes were produced, which is 16.7 and 15 percent more respectively than during the same period in 1978.

As a result of the more efficient utilization of raw materials and products obtained during the processing of livestock and meat, of the utilization of animal and plant protein in the production of sausages, culinary items and canned products, of the improvement in technology, of the curtailment of losses and of other measures the supplies of meat products increased by 288,000 tons, comprising 102 percent of the goal for 9 months and 74 percent of the annual plan.

The utilization of animal blood for food has improved somewhat, with the collection of 141,000 tons (92 percent of supplies as compared with 90 percent during the same period in 1978).

In the collection of blood for foodstuffs the highest indicators were achieved by enterprises of the meat industry of the ministries of the meat and dairy industries of the RSFSR, Lithuanian SSR, Moldavian SSR, Latvian SSR and Estonian SSR. With the exception of the RSFSR, the enterprises of these republics collect practically all of the blood than can be used for food purposes.

During 9 months of 1979 as compared with the same period in 1978 the production of sausages using food casein increased by 33 percent, using light edible blood serum, starch and wheat meal--by 3 percent, and using subproducts of Category 2, food blood and vegetable raw materials--by 1 percent, including of blood sausages--by 12 percent.

However, there were serious shortcomings and violations in this work. The minmyasomolproms of a number of union republics did not secure the fulfillment of goals in the collection and utilization of animal blood for food purposes, in the sale of food bone, in the production of soup mixes and ragout and in the production of sausages with protein supplements.

The supplies of food blood are used insufficiently in the enterprises of the meat industry in Belorussia (82 percent of supplies of food blood), Uzbekistan (50 percent), Kazakhstan (62 percent), Georgia (57 percent), Kirgiziya (62 percent), Tadzhikistan (54 percent), Armenia (62 percent) and Turkmenistan (25 percent).

The work to utilize soy proteins is organized unsatisfactorily in the industries of the Belorussian SSR, the Uzbek SSR, the Kazakh SSR, the Georgian SSR, the Moldavian SSR and the Latvian SSR.

The task to produce blood sausages has not been fulfilled by the minmyasomolproms of the Belorussian SSR, the Uzbek SSR, the Kazakh SSR, the Lithuanian SSR, the Kirgiz SSR and the Tadzhik SSR.

In January-September 1979 the following have been put into operation: a meat combine in the city of Cheboksary, Chuvashskaya ASSR, with a capacity of 100 tons of meat per shift; a freezer for 4,000 tons of storage in the meat combine of the city of Shumikhe of Kurganskaya Oblast; meat canning shops in the Gotnyanskiy and Cherkasskiy meat combines; a ham canning shop in the Berezovski Meat Combine of the Belorussian SSR; a freezer with a storage capacity of 300 tons at the experimental-testing plant for the production of children's and dietetic meat products in the city of Gnedyn of Kiev Oblast.

In January-September 1979 market sales were 6,655,000 tons of meat products calculated on the basis of meat, including meat and subproducts of category I--3,876,000 tons or 112,000 tons more than during the same period in 1978, and including in frozen form--2,382,000 tons.

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8228

CSO: 1824

## UTILIZATION OF FOOD SCRAPS FOR LIVESTOCK FEED

Moscow ZHILISHCHNOYE I KOMMUNAL'NOYE KHOZYAYSTVO in Russian No 12, Dec 79  
p 9

[Article by L. P. Astasheva, senior engineer of the Glavzhilupravleniye [Main Housing Administration] of the RSFSR MZhKKh [Ministry of the Residential and Municipal Industry]: "The Collection of Food Scraps Through Joint Efforts"]

[Text] The utilization of all existing reserves and possibilities for increasing feed procurement and for successfully completing overwintering is of great importance. Among such reserves are food scraps--full-value replacements for concentrated feeds. The proportion of food scraps in the daily rations of hogs that are being fattened can reach 50-60 percent.

The RSFSR Minzhilkomkhoz [MZhKKh] jointly with the RSFSR Mintorg [Ministry of Trade] and the RSFSR Minsel'khoz [Ministry of Agriculture] is doing a great deal of work to collect food scraps from enterprises of public nutrition, of the trade-storage network, of children's and health institutions and from the population.

An inter-departmental committee of the aforementioned ministries controls the organization of procurement of food scraps in autonomous republics, krais and oblasts.

In the RSFSR during 1971-1978 the collection of food scraps increased by 2.6 times (from 1,260,000 tons to 3,279,000 tons), including from the population--by 2.3 times (610,000 tons and 1,413,000 tons respectively). In 1979 autonomous republics, krais and oblasts were assigned the task of adding an additional 260,000 tons to the plan that calls for the collection of 3,600,000 tons of scraps. In 9 months in the RSFSR 2,452,600 tons were collected, including 1,049,600 tons from the population. In comparison with the corresponding period last year, growth has comprised 144,300 tons in total and 60,400 tons in that collected from the population.

The best results were achieved by Bashkirskaya, Chuvashskaya and Karel'skaya ASSR's, and Irkutskaya, Volgogradskaya, Leningrad, Murmanskaya and Rostovskaya oblasts.

We should especially note the well-organized work in Leningrad. The oblast office on the procurement of non-plan feeds maintains constant controls over the organization of the collection of food scraps from the population, maintains accounts with housing and transportation organizations and conducts extensive informational work among the population. Each year 700,000 leaflets are printed. Stands of graphic propaganda have been organized in municipal-operational offices and housing-construction cooperatives. Films entitled, "Collect Your Food Scraps," and "Don't Contaminate Your Food Scraps" are shown.

Each year socialist obligations are assumed by the bureau as a whole, by brigade sections and by individual workers. The results of work toward their fulfillment are evaluated at monthly dispatcher's meetings and quarterly at a general meeting of the collective. The winners of socialist competition--the best brigade sections--are awarded the Challenge Red Banner for first place and the challenge pennant for second and third place in addition to monetary prizes.

It is planned to make supplementary payments to workers of the housing-municipal administration for the fulfillment and overfulfillment of goals in the collection of food scraps. The bonus comprises 11 percent of the base pay or 1 ruble 50 kopecks per ton delivered to fattening enterprises.

The problem of supplying municipal organizations with packaging has been solved completely. Packaging is supplied by the Metalloposuda Plant of the Administration of Local Industry of Leningradspolkom [Leningrad city executive committee].

The scraps are transported through the facilities of the Spetstrans [Special transportation] administration, sovkhozes and vegetable bases. Approach roads in sovkhozes are in satisfactory condition, food scraps are accepted unflinchingly and utilized as livestock feed only after thermal treatment.

The sovkhoz that best utilized food scraps is the Detskosel'skiy in Pushkin. Here there is a feed shop for the thermal treatment of feeds with a capacity of 160 tons daily. The delivery of food scraps to the feed shop is mechanized. There are 24,000 hogs being fattened and 50 percent of their rations consist of food scraps. The average daily weight gain of the animals is 543 grams, costing 89 rubles per 1 quintal of weight gain.

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8228

CSO: 1824

## SPECIALIZED KOLKHOZES FOR THE PRODUCTION OF LIVESTOCK FEED

Kiev PRAVDA UKRAINY in Russian 15 Jan 80 p 2

[Article by V. Arkhipov, candidate of agricultural sciences: "Feed is Produced by Specialized Kolkhozes--Course is Set on Specialization and Concentration"]

[Text] As we know, the July (1978) plenum of the CC CPSU noted in its decree that there is a serious lag in feed production, indicating that this is one of the chief causes of the inadequate rate of development of the socialized animal industry. The following task was put to Party, soviet and agricultural bodies: to put feed production at farms on a specialized sectorial basis, to develop in all ways cooperation and agroindustrial integration, to organize interfarm associations and enterprises for the production and processing of feed.

Questions pertaining to management of feed supply for interfarm livestock raising have become a problem. In this republic, some experience has been acquired in solving it. Now it requires dissemination; this is imperative for further refinement of management of feed supply.

In the last few years, livestock production has been concentrated in spetskhozes [specialized kolkhozes] and interfarm enterprises. Organization of feed provisions varies in them. The spetskhozes (which are kolkhozes leaning toward specialization) are raising feed crops themselves. A total of 35-40% of the fields is reserved for feed crops. Mechanized feed-gathering groups have been formed in those farms where organization has reached a more sophisticated level. Their jobs include growing, harvesting and procurement of livestock feed to be stored.

The spetskhozes have existed for about 20 years as a form of organizing production. However, their structure is still unchanged and multisectorial. For them, the plans are to sell the State several types of products, including grain. Thus, raising feed crops appears to be relegated to a secondary place.



As for interkolkhoz livestock enterprises, essentially they do not have the fields or equipment. Hence, they have their own difficulties and problems. Ultimately, the farms that supply feed are not sufficiently concerned either with the quality of their product or regular and prompt delivery thereof. Moreover, they also have plans for selling milk, meat and another animal products to the State. For expressly this reason, for example, in 1978 the Lutsk interkolkhoz enterprise for the production of beef was supplied with only one-third the needed coarse and succulent feed, while the enterprise in Novoukrainsk, Kirovogradskaya Oblast, received only one-fourth of what it required. Most such enterprises in Vinnitskaya Oblast received from kolkhozes that are participants in the cooperation only half of the feed stipulated in the contract.

A more refined route has developed in some oblasts for supplying the interfarm enterprises with livestock feed. We refer to specialization of an adjacent kolkhoz in growing feed crops. But even such kolkhozes have, as before, plans to sell the State livestock products, sugar beets and grain.

Moreover, special technology is wanting for the work to be done to produce the feed. There are minimal material and spiritual incentives for fulfilling feed-producing plans. Management and specialists still devote secondary attention to this area. Feed has still not been promoted at the spetskhozes to the level of the main commercial product.

More recently, interfarm livestock enterprises have joined with kolkhozes in Vinnitskaya, Volynskaya and other oblasts of the Ukraine, and they were named spetskhozes for the production of livestock products--beef, pork, etc. However, narrowly specialized livestock enterprises on an interfarm footing constitute an important achievement of our times, and to merge them with kolkhozes and formation of spetskhozes for livestock production means, in essence, that they are returned to their former, multisectorial form, which has already played its part in the development of agriculture.

All this constitutes sufficient grounds to conclude that the problem of supplying livestock enterprises with feed should be solved by means of creating special-purpose farms, spetskhozes for feed ["kormospetskhvz"]. The latter should work only for them as partners for a commodity. It should be noted that this view conforms with the opinion of other scientists. The situation has switched to such organization in 1978 in many parts of Kievskaya Oblast. For example, the Dneprovskiy Sovkhoz Plant in Borispol'skiy Rayon, within the group of sovkhoses of the Darnitskiy Trust, became specialized in 1978 for the production of feed; this plant has a total of more than 4800 hectares of agricultural crops. For the preceding 3 years, the sovkhoses in this group received an average of about 2110 tons of hay and 7120 tons of green mass from their natural hay fields. Yet the Dneprovskiy specialized kolkhoz for the production of feed harvested twice as much hay and green mass within the first year of its operation from the same meadows and fields. In addition, it

processed 4780 tons of haylage and 630 tons of vitamin-containing grass meal. Overall harvesting of feed units increased by 2.5 times. In 1979, even more hay was stored: 5200 tons. These first achievements are attributable not only to the fact that special technology is now concentrated at the kolkhoz, but marketability of the feed. At the present time, the plans call for production of feed only at the Dneprovskiy spetskhoz, with no plans for other agricultural products.

Unfortunately, spetskhozes for feed production are being organized only in the backwater [floodplain] region of the Dnepr, in Chernigovskaya and Kievskaya oblasts. But livestock farms are situated mainly in plowed field areas of this republic. It is high time to make use of the valuable experience in organizing feed production in all regions of the Ukraine.

In 1979, narrowly specialized feed spetskhozes began to be organized in Ternopol'skaya and Khmel'nitskaya oblasts. It is too soon to report major achievements there. Narrow specialization in feed production is only taking its first steps. There are still rough spots in the relations with livestock enterprises. But they can be smoothed out if the localistic tendencies can be eliminated.

Little has been done thus far to refine the production and management structure. It remains the same: cumbersome, with inflated staff, as is the case in multisectorial kolkhozes. Experience shows that functional ties merge with line personnel ties. The main specialists are becoming administrators of departments. This should simplify the management structure and make it more economical and operational.

Of course, organization of specialized feed producing kolkhozes involves some difficulties with respect to redistribution of State plans for the purchase of agricultural products within a region. But, in view of the enormous advantages of intraregional [intrarayon] specialization, we should no longer postpone the solution to this problem, on the eve of a new five-year plan.

How can this be implemented in practice? Apparently, the speediest route is as follows: First the feed requirements and land needed to produce it are planned and substantiated economically. Then, specific farms are selected, which have the necessary amount of land and which are situated close to the livestock interfarm enterprises and mixed feed plant. When estimating the area of land to be used by the feed spetskhozes, one should abandon the traditional conceptions that cattle must be fed green feed for the entire daily caloric ration (50-70 kg) in the spring and summer. This is wrong. It should be used in the rations only in amounts necessary to supplement the daily dose of carotene and other physiological substances that are the most important for active digestion and animal growth.

The rest of the daily ration should consist of coarse and succulent feed, and silage, as well as concentrated feed. This can reduce drastically

the area needed in the fields for green mass planting. Also, there will be an increase in resources for storing haylage and silage. Then the fields will be used to grow fully ripe grain.

In order to legalize the reorganization of farms, the kolkhoz council is adopting a resolution, according to which the remaining farms of the rayon will assume the duties of specialized feed farms to sell all types of agricultural products to the State.

There is now an acute need as well to work out measures for providing material incentives to administrators and specialists for successfully raising feed crops. We believe that the rayispolkoms should be the initiators of setting cash bonuses for overfulfilling the feed production norms, both in quantity and quality, as is done in other farms of the region. This is not in contradiction with the existing decrees of the USSR Council of Ministers, and it is based upon the item in the degree of the July (1978) plenum of the CC CPSU pertaining to placing feed production on a sectorial basis.

Another important measure is to set estimated prices that would make the operation of these specialized kolkhozes for feed production profitable. For example, estimated prices have been set in several rayons of Vinnitskaya Oblast for feed grain on the level of the State purchasing prices, and for coarse, succulent and green feed in proportion to the amount of feed-protein units they contain (incidentally, these prices should take into consideration not only the quality, but date of receipt; it should not be forgotten that green mass is also gathered in the early spring, sometimes to the detriment of harvest size).

Apparently, in order to equalize management conditions, the estimated prices for feed should assure the same level of profit to the specialized kolkhozes as to the neighboring multiproduct farms.

Thus, in order to control feed availability to interfarm livestock and poultry, it is imperative to implement the following basic elements of a modern intensive industry: first of all, systematic and in-depth specialization of farms for feed production; concentration of special-purpose capital investments there for amelioration, use of chemistry, mechanization and automation of technological processes; development of incentive measures, both material and spiritual, as well as economically substantiated purchase prices for raw material to produce feed and production, with adoption of standards for these elements.

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## EXPERIENCE IN REMODELING LIVESTOCK FARMS IN BELORUSSIA

Minsk SEL'SKOYE KHOZYAYSTVO BELORUSSII in Russian No 12, Dec 79 pp 12-13

[Article by K. F. Borisovets, doctor of economic sciences; S. I. Plyashchenko, doctor of veterinary sciences; and A. F. Trofimov, candidate of veterinary sciences: "Livestock Farm Remodeling: Experience, Prospects"]

[Text] Industrialization of animal husbandry is not only the construction of large complexes, it is also the remodeling and expansion of currently existing livestock farms. Practice has shown that the costs for remodeling are significantly lower, and they are repaid 3-4 times more quickly than those for new construction. It is possible to remodel 4-5 cattle 'stalls' on existing livestock farms and equip them with the newest equipment for full mechanization for the cost of a single cattle 'stall' in a new complex. Furthermore, many economically sound farms can carry out livestock-farm reconstruction with their own forces, without involving construction organizations. Therefore, construction of new complexes must be realized first of all on those farms where the existing livestock farms are not worth remodeling because of physical wear and tear and because of obsolescence.

Remodeling and reequipping existing livestock farms is also very important because it makes possible the rational use of livestock buildings on hand, which account for 80-85 percent of the estimated cost of new construction and up to 90 percent of the value of fixed capital for dairy farming on kolkhozes and sovkhoses. These are primarily capital structures built during the last 10-15 years according to typical designs and designed for a lengthy service life, but their equipment, the system for cattle maintenance and the technological elements which have been established, etc. do not conform to the modern level of scientific-technical progress. Therefore the expansion of such livestock farms, the reoutfitting, the introduction of progressive technology and the scientific organization of production and labor is one of the most important problems in developing livestock raising, in bringing it onto an industrial base and encouraging milk production.



There are already many examples confirming the aforesaid within the republic. The dairy herd of the kolkhoz "Sputnik" in Logoyskiy Rayon (750 head) scattered over four farms. Two years ago it was decided to concentrate all of the cows on a central livestock farm. They did so, remodeling this farm. Now 50 cows are assigned to one milkmaid, and each girl works with four milking machines. The animals are kept on tethers, manure is removed using a drag conveyor, feed is distributed by a feed dispenser. Specialized cattle feeders feed the livestock. The milkmaids' duties include only milking the cows.

The milk output from the farm's cattle increased by almost 20 percent as a result of concentrating the livestock in one place, specializing the work of livestock farmers and expanding the feed base for just one year. The gross milk production increased by a factor of 2.2, while the labor costs for a single quintal of output declined by 26.4 percent, its production cost by 8.9 percent and feed costs by 33.6 percent.

The quality of the product realized improved significantly. In the farm's milk section chilling units have been installed and the milk is carefully filtered. Almost all of the milk dispatched to the dairy plant is taken as first class.

The remodeling of the existing facilities and the construction of two new ones on the kolkhoz imeni Lenin, Gomel'skiy Rayon, permitted us to create a complex for milk production on an industrial base of 800 cows. Instead of keeping them in tethers, as was the case on previous farms, they equipped them with combined and regular stalls. Feeding and rest for the animals was combined. Feed is distributed by a mobile conveyor using a KTU-10A feed distributor. The cows are milked on the floor using a UDT-6 "Tandem" machine. The work load for a single milking machine operator was increased to 100 head, and the labor costs for production of one quintal of milk decreased to 3.5 man-hr.

It is possible to cite the "Rassvet" kolkhoz, Lyubanskiy Rayon, as an example. There a complex for controlled heifer raising with an annual output of 1,000 head is being created by remodeling currently existing structures and building new ones. Modern technology for livestock maintenance will be utilized in the buildings. Feed distribution and manure collection are being mechanized.

However, the situation is also encountered when the directors and specialists of certain farms consider ordinary repair of the buildings to be remodeling. The animals are not concentrated, the livestock farms are not enlarged and the mechanization of production process is not improved. Remodeling means, first of all, restoration of the basic production resources on hand. It is divided into three categories--minor, medium and full. In minor or partial remodeling, the individual means for mechanization and equipment which has been outdated either by wear and tear or through obsolescence are replaced in the main; the buildings and structures are replanned. In medium remodeling, radical production reequipping is carried out, depreciated

building elements are replaced and individual buildings which are unsuited to further use either have additions built on or are totally replaced. Full (total) remodeling is characterized by significant replacement of the main production buildings on hand due to their being torn down or to their use in another capacity. As experience confirms, total remodeling is most efficient when the coefficient of the restoration of basic resources is as much as 0.4.

Before undertaking the remodeling of livestock farms, the directors and specialists should firmly clarify what size the remodeled farm will be and what kind of efficient equipment there will be on it for maintaining the livestock.

We consider, and experience has confirmed it, that the optimum size for remodeled dairy farms are farms of 400, 600 and 800 cows. They are not maintained on tethers, but in stalls. The experience of many farms has shown that labor costs for one quintal of milk are reduced to 3-4 man-hr., while the work load of a single worker on the farm increases to 32-36 head. When the tetherless stall maintenance system is used, the size of the stalls for the animals to rest should be 190-200 cm. long by 100-110 cm. wide. Floors are laid 15-20 cm higher than the manure conduit surface so that manure does not get into the stalls.

There can be diverse systems for removing the manure. A floatable gravity, feed system has recommended itself positively on many farms. However, the decisive point here is the water-proofing of the manure conduit walls. This condition must be taken into consideration during construction. The manure conduit walls must be tested for resistance to water before the facility is put into use. Delta scraper and bulldozer installations are successfully being used for removing manure.

A dairy complex for 1100 cows, with tetherless, stall maintenance and a floatable, gravity-feed system for manure removal has been functioning for more than two years now on the "Novoye Poles'ye" sovkhos, Soligorskiy Rayon. The productivity of the cows here exceeds 3700 kilograms of milk per head. A 600-cow dairy complex on the "Pogorodno" experimental base, Voronovskiy Rayon, where a tetherless stall system for cattle maintenance, belt distribution of feeds and floatable, gravity-feed manure removal systems are used has been in operation successfully for more than 3 years. Using UDS-3 installations to milk the cows permits us to set norms for the feeding of concentrates on the milking floor. Last year, 3714 kilograms of milk were produced from each cow, 302 kilograms more than two years ago. The labor costs for one quintal of milk dropped to 3.4 man-hr. during these years.

It must be taken into consideration that for tetherless stall maintenance of the cows, the width of the feed and manure conduit should be no less than 270 cm. The passages for the cattle to move back and forth from milking are doubled, with the width of each being not less than 100 cm. The slotted floor in the passages is made from cast-iron with the slots being 35-37 mm

wide and the strips being 40-45 mm wide, or from reinforced concrete with the slit size and strip width being 35-40 mm and 100-120 mm respectively.

In cow barns where the livestock is maintained in stalls, all of the animals are divided up into groups. The size of the groups is determined by the physiological state of the animals and should not exceed 50-60 cows. It is necessary to equip the milking areas with UDT-6 "Tandem," UDE-8 "Yelockha" and UDS-3 machines, which are recommended highly for milking the cows.

Manure collection and processing are important on livestock farms being remodeled. The system for manure utilization should include not only removing it from the livestock buildings, but its preparation, transportation and application to the soil as well. These questions must be solved on an over-all basis.

And how should narrow cow barns be remodeled? It is advisable to convert them to calving sections with dispensaries.

Maintenance of the cattle in such cow barns is tethered, milking is into milk pails. Feed distribution is with the TVK-88 feed dispenser or any other stationary dispenser, manure collection is with a TSN-3.0 or TSN-160 scraper conveyor. The calves are kept in the dispensary to an age of 15 days in individual cages.

And there is still one condition which the directors and specialists of farms should consider when remodeling livestock farms--providing the animals with quality feeds. The size of the remodeled livestock farm must necessarily be correlated with the feed base. Is there adequate land for production of the required amount of feeds and for creation of long-term cultivated pasture lands in the brigade where the livestock farm is situated? This is the first and the main consideration when transferring milk production to an industrial base.

And there is more. Construction of complexes and livestock farm remodeling should be carried out according to the so-called 'black-and-white' system, insuring optimum separation of the individual farm cycles based on zooveterinary criteria into internal-production (the white zone) and ancillary (the black zone). These criteria determine the economic and zooveterinary unity of the complex. This in turn permits us operationally, with the least expenditure of labor and funds, to carry out planned preventative and, where necessary, therapeutic veterinary services for the animals. We are speaking of the fact that the livestock raising complexes should be moved closer to closed plants and encircled with a zone which will prevent danger from spread of infection. They should have fencing in good order and appropriate planned approach routes, reliably and continually operating pits and sanitary sluices, the necessary veterinary buildings and a green zone.

These are the fundamental measures, the realization of which permits us to remodel dairy farms with more justification, to increase the effectiveness of capital investments, to reduce the periods for their recovery and, in the final analysis, to produce a less expensive product from livestock breeding.

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## COMPLEXES URGED FOR BREEDING AND DAIRY FARMING

Moscow SEL'SKAYA ZHIZN' in Russian 6 Jan 80 p 2

[Article by L. Ernst, academician of VASKhNIL: "Livestock Breeding and Dairy Complex"]

[Text] In the last decade there has been a marked acceleration of the process of converting production of animal breeding products to an industrial basis. Today almost all poultry breeding for eggs and meat is based on industrial technologies. More than a fourth of all pig-raising output and a marked proportion of the beef is produced at large complexes and farms of the industrial type. The country's scientific and planning institutions have developed and introduced a number of new technological solutions making it possible also to put milk production on an industrial track. In the past year about 1,800 dairy complexes operated in the country.

Although the share of the industrial complexes and firms in the overall production of milk is still small, they have a future, their contribution to the production of this product will grow steadily every year. The work experience of those complexes such as, for instance, the "Tartu" in the Estonian SSR, "Lensovetovskiy" in Leningrad Oblast, "Kurkino" in Vologodskaya Oblast, and "Kutuzovka" in Khar'kovskaya Oblast, the dairy complex of the Kolkhoz imeni Lenin in Tul'skaya Oblast, and a number of others shows that the use of industrial technologies makes it possible to reach a high level of productivity of the cows (about 4,000 kilograms and more on the average per cow per year), to reduce sharply the outlays of labor and of fodder per unit of output, and substantially to improve the working conditions of the animal breeders. For all the country's dairy complexes as a whole the average milk yield per cow in 1978 was 287 kilograms higher than in the kolkhozes and sovkhoses.

However, still many dairy complexes have far from reached the planned capacity, their excellence with regard to productivity of the animals is still not great, and the potential contained in the applied technologies is still slow to be realized. Certainly, the new technologies of milk production are more complicated than the traditional ones, and this has a definite effect on the rates of assimilating the planned capacities of the complexes. The

vital causes of the low effectiveness of some of them are most often a weak fodder base, low skills level of the servicing personnel, and serious shortcomings in filling in the herd.

Studies have shown that transferring animals to a new technological environment requires a definite reorientation of their organism. Cows react in different ways to a change in conditions. In a number of cases the animals, having been highly productive at ordinary farms, have sharply reduced their milk yields at an industrial complex. Along with this, a significant number of the animals has sharply increased the level of productivity with the transfer to a complex.

Generalization of the data of Soviet and foreign researchers, and also of advanced know-how makes it possible to determine the basic traits of the type of cows suitable for the modern large mechanized farms and complexes. These animals should have a strong constitution, weigh 450-500 kilograms during the first calving, and 550-650 kilograms at the age of the third calving, and be tall. This aids better adaptation to machine milking and reduces the risk of diseases and udder injuries. The animals should have strong extremities with a strong ungulate horn. They should be characterized by resistance to a number of diseases and particularly to mastitis, which still is very detrimental to dairy livestock breeding, and they should have adaptability to two sessions of machine milking with a productivity of not less than 4,000-5,000 kilograms of milk per year. It is desirable for animals in complexes to have a steady, strong type of nerve activity, to be capable of withstanding stress factors and be conducive to group maintenance.

At the present time the proportion of such animals at complexes and farms is small, and the task of breeding work is to increase this proportion in as short a time as possible. Stated in the resolution of the CPSU Central Committee and the USSR Council of Ministers, "On Measures for Further Improvement of Pedigree Work in Animal Breeding," approved by the July 1978 Plenum of the CPSU Central Committee, is the necessity of paying chief attention to raising the productivity of the dairy herds, increasing the resistance of the animals to diseases and the adaptability to conditions of industrial technology.

In order to make this resolution a reality, the collectives of scientific research institutes in the zootechnical specialties together with practical workers in the pedigree service have developed a complex plan for breeding and pedigree work in the country's animal husbandry up to 1990, which was approved at the All-Union Conference on Pedigree Work. The plan provides for a significant strengthening of the pedigree base for dairy livestock breeding, the creation of a broad network of specialized farms and animal care specialists [elevers, from the French] for annual verification of the progeny of 21,000 sires, the expansion of the network of specialized farms for raising young replacement bulls, and also the conduct of other measures.

The organization of breeding centers in the country for animal husbandry, including for the main breeds of cattle, will make it possible

to conduct breeding at more rapid rates in the direction of increasing the milk productivity of the cows, improving the quality of the output and increasing the adaptability of the animals to the conditions of the industrial technologies.

It is generally known that out of all the breeds of cattle raised in our country at the present time the one most prepared for industrial technology is the black and white breed. Therefore in the coming ten years it is planned to insure advancing growth in the number of this breed in order to bring its proportion to 35 percent in the total head of cattle.

Also envisaged is a series of measures for increasing the genetic potential and adaptability to industrial technologies of other widespread breeds, particularly the Simmental, red steppe and certain others, by means of intrabreed selection, and with the use of different variants of cross-breeding. As experience has shown, most effective is the crossing of black and white cattle with the Holstein-Friesian breed, and also crossing Simmentals with red and white Holsteins. As a result of the crossing there is a substantial increase in the annual productivity of the cows, they prove to be better adapted to the conditions of modern industrial technology. For instance, in farms of Kiyevskaya Oblast in the last 4 years, 460,000 cows of the black and white breed were inseminated with semen from bulls of the Holstein-Friesian breed. The productivity of the halfbreeds in farms with a well set-up fodder base exceeded the milk yield of the starting head by 500-600 kilograms, and in the bulk of the commodity farms it exceeded the yield of the starting head by 300-350 kilograms.

One of the most important tasks for further improvement of breeding and pedigree work is the broad introduction of modern methods of control of the productivity of the animals, immunological expertise, precise measuring equipment and automated systems of recording and processing data. Being used successfully in certain republics, for instance, is a system of centralized breeding work, the "Seleks" system. Thus, in the Latvian SSR this system has made it possible to automate the processing of data of zootechnical and breeding records. The farms transmit to a computer center only three primary documents with data on the productivity, times of insemination and changes in the breeding use of the cows. Thoroughly analyzing the incoming information, the center transmits recommendations to the specialists about specific work in the following months: the times for feeding additional nutrients and inseminating the cows, lists of cows intended for culling, subject to gynecological examination, and so on.

The computer center also gives the farms, rayons and associations summary information about the productivity and reproduction of animals not only by farms, but also by groups of cows assigned to milkmaids, and also forecasts of the milk yields and calf production for the next 15 months. Produced at the same time is a large volume of information on evaluating the producer-bulls and other questions of breeding and pedigree work.

The economic benefit from use of the "Seleks" system in the republic comes to 6.3 million rubles per year.

Along with this, it must be noted that at the present time the process of improving the breeds of dairy cattle for adaptability to the conditions of industrial technology is being slowed down, since the raising of young stock for reproduction of the herd in the bulk of the breeding farms is based on out-dated technology. Meanwhile it is possible to shape animals of the necessary type only under the conditions of industrial technology. For this reason we feel that the herds of the breeding farms should be converted to modern technology at advancing rates, certainly taking into account the specifics of the pedigree animals. Only in this case will the contradictions between the goals and conditions of breeding be removed.

In the complex plan of breeding work in the country it is envisaged to create at main and zonal breeding centers 11 state control stations for conducting tests of new types and strains of dairy cattle under the conditions of industrial technologies. These stations, undoubtedly, will play a large part, if the pedigree herds, from which the new types and strains will be taken, are converted to a modern technological basis.

Concentration of animals at large complexes and mechanized farms is not an obstacle to breeding work. On the contrary, under identical conditions of feeding, maintenance and exploitation of the animals, under the conditions of an identical technological environment, it is possible to evaluate their genotypes more accurately, and this is the basis of breeding work. In a number of complexes herds have already been formed which combine the high genetic potential of productivity of the animals with their adaptability to conditions of industrial technology. These farms should receive the statute of breeding factories and pedigree stock farms, so that the pedigreed young stock produced there will be directed first of all to the zones where the industrial technology of milk production is being introduced on the broadest scales.

Development of the renovation of existing kolkhoz and sovkhos farms can also play a large part in shaping a herd of dairy cattle adaptable to industrial technologies. This will expand considerably the base for mass breeding, and make it possible to accomplish at more rapid rates the switching of dairy cattle breeding to an industrial track.

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#### YAROSLAVSKAYA OBLAST DAIRY PRODUCTION POOR

[Editorial Report] Moscow SOVETSKAYA ROSSIYA in Russian on 29 January 1980 p 1 carries an article by Ye. Syrtsov on difficulties in dairy production in Yaroslavskaya Oblast. Over half the article is devoted to problems in Danilovskiy Rayon, one of the poorest producers in the Oblast. Danilovskiy Rayon is contrasted with Breytovskiy Rayon, which under a new first secretary improved its performance in this area significantly. The article then takes a broader look at all of Yaroslavskaya Oblast and laments that attention to the leaders in socialist competition notwithstanding,

"....organizers of socialist competition forget about the remaining masses of competitors (and they are the overwhelming majority), concern themselves too little with creating the best conditions for the fulfillment of socialist pledges.

"It would not be bad to examine why the production of milk is developing extremely slowly and with great difficulties on an industrial base. The majority of dairy complexes are unprofitable, low in productivity, do not meet their plans, and work below planned capacity....

"These are all serious errors first and foremost of the oblast party and the oblast executive committee, which have still not found the most effective ways of implementing decisions of the July 1978 and November 1979 Plena of the Central Committee of the CPSU, which placed crucial tasks in front of the livestockmen."

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#### ARMENIAN LIVESTOCK, FEED PRODUCTION UP, PROBLEMS REMAIN

[Editorial Report] Moscow PRAVDA in Russian on 3 February 1980 p 1 reviews the livestock situation in Armenia giving a generally positive appraisal: In 1979 production of milk was up by five percent; productivity of cows was up by four percent. Sale for slaughter of cattle and poultry increased over 1978. In 1979 hay procurement was up by 17 percent, haylage procurement by 16 percent and silage procurement by 21 percent over 1978. However,

"Beyond the good overall indicators are hidden quite a few lagging enterprises. The numbers of neat cattle, swine and sheep in the republic have declined, this may not be considered normal. Last year's meat procurement plan was fulfilled with much difficulty. Much of the blame for this lies with "Armzhivprom" and "Armptitsprom", whose enterprises failed to deliver over 5,000 tons of meat.

"....The main thing now is to conduct the winter maintenance of the cattle in a well organized manner. Efforts of farm collectives should be directed toward achieving high livestock productivity everywhere, toward giving the Homeland more meat, milk and other valuable produce."

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## IMPROVED ACCOUNTING FOR LIVESTOCK FEED EXPENDITURES URGED

Moscow ZHIVOTNOVODSTVO in Russian No 10, Oct 79 pp 33-34

[Article by Candidate of Economic Sciences D. Ya. Tuayev, docent of the Gorskoye Agricultural Institute: "Improve the Accounting for Feed Expenditures"]

[Text] During the period for wintering cattle there is great importance in the rational utilization of the feed that has been procured for fully providing the cattle with feed. A special role belongs here to accounting. Only a precise and prompt accounting for the feed that has been procured and the most strict supervision over its expenditure will provide an opportunity for managers and employees of animal husbandry to get the regular and economical expenditure of the available feed reserves smoothly underway.

Expenditures on feeds occupy (on the average) 38 to 39 percent in the structure of the production cost of output of the dairy flock, while they occupy 45 to 46 percent in the production cost of output of the younger animals and livestock that is used for fattening. In connection with this, the documentation for the expenditure of feed is of great importance in the organization of accounting and supervision over its rational utilization. Documentation has been called upon to promote the uncovering of reserves for reducing the expenditures of feed in the production cost of the output of animal husbandry. With these goals in mind, the scientific quest for ways to improve the accounting for expenditures of feed is of great practical significance.

At the present time the initial accounting of expenditures of forage is carried out in the "Record of Expenditure of Feeds" (Form 45), which is drawn up in two copies by the manager of the farm or the livestock expert in two copies. The plan for feeding animals for the month, as approved by the director of the farm, serves as the basis for writing it out.

The limit for the expenditure of feed by types in a breakdown by each sex-and-age group of animals is indicated in the record. The limit is determined by the production program, the feed resources and the scientifically valid feeding rations adopted on the farm. One copy of the record is issued to the storekeeper (forager), while the second copy goes to the consignee of the feed.

The practice of the kolkhozes in the Severo-Osetinskaya ASSR which we surveyed indicates that the wages of cattle-yard workers and feed-haulers, which have been made subject to the quantity of output obtained, guarantees the feeding of all the forage to the livestock. If then the labor of the employees is remunerated subject to the number of cattle being maintained (which takes place on many kolkhozes of our republic during the care of young animals), then even an additional signature in the record of the cattle-yard worker will not promote the strengthening of supervision over the rational expenditure of fodder assets.

It is necessary to strengthen administrative control for the sake of ensuring efficient and full utilization of feed according to its purpose. The heads of livestock farms, brigade leaders, livestock experts and accounting clerks must supervise the expenditure of feeds as they perform their managerial functions.

An economic council of the farm, which began the quest for ways and reserves to reduce the production cost of output, was formed at the Chermen Kolkhoz in the Prigorodnyy Rayon of the Severo-Osetinskaya ASSR after the introduction of internal economic accounting (1977) on the dairy farm. At its initiative, the daily weighing of feed being expended was gotten smoothly underway. As a result, during the first year then after the introduction of cost accounting and the compulsory weighing of feeds, the expenditure of them was lowered by 18 percent in comparison with the previous year, while the production cost of one quintal of milk was lowered by 3 rubles and 39 kopecks. The Po Zavetam Il'icha Kolkhoz of that same rayon and some other kolkhozes of the republic achieved a similar reduction in the expenditure of feeds and in the production cost of milk.

By studying the state and methods of accounting for the expenditures of feed, we reached the conclusion that there are some shortcomings in the existing procedure for accounting for the expenditures of feed. For instance, the absence of information on the content of digestible protein in the feeds makes it more difficult to uncover the reasons for the overexpenditure or savings of assets on this item of expenditure and complicates the analysis of the productivity of animals. Hence, we deem it advisable to introduce an indicator for the amount of digestible protein in the "Record of Expenditure of Feeds." The introduction of the aforementioned indicator into the record of expenditure of feeds, of course, will still not guarantee that one obtains reliable information on the quality of the feeds being expended. Hence, of no less importance is the accurate calculation of the indicator itself for the quality of feeds expended and its reflection in initial accounting and in bookkeeping journals.

A study and analysis of the practice which has taken shape on the republic's kolkhozes of keeping a zootechnical account on livestock farms have enabled us to disclose that a number of important technical and economic indicators are not at all reflected in the initial documents or that the level of the indicators is inaccurately determined. For instance, it has been stipulated that one calculate in the record of expenditure of feeds the number of feed units

in the forage expended. Such accounting permits one to reduce feeds of different sorts to a single gage, with the help of which comparable data on the expenditures of forage per unit of output, per head of livestock, etc., are obtained. However, it has been established by our research that this work is set up in an unsatisfactory manner on the majority of kolkhozes in the republic. A recomputation of the physical weight of feeds into fodder units is not made in each document and without the participation of a livestock expert and it is performed by the accounting staff of the bookkeeper's office on the basis of data from cumulative registers during the period for the compilation of quarterly and annual reports. In conjunction with this, the selection of conversion factors is made in terms of the most consolidated and extended groupings of feeds (mixed feed, hay, grain feeds, green forage, etc.) without taking their types and quality into account.

Without precise and complete information on the quality of the forage that has been fed, it is impossible to select the conversion factors properly, since the content of fodder units in individual types of feeds is unequal even within the limits of one group. Thus, the maximum content of fodder units in 1 kg of feed in terms of a group of grain feeds is 38 percent higher than the minimum, is 5 times higher in succulent feeds, is 64 percent higher in silage, and is double in green forage, while it is 9 times higher in the by-products of industrial processing.\* In addition, the reference tables for the content of nutritious substances in feeds are specified with the assumption that consideration has been given to the prompt gathering of fodder crops and the satisfactory storage of output.

It is a well-known fact that the ration for animals must be balanced in terms of the content of nutritional substances (digestible protein, mineral substances and carotene). A failure to observe this principle leads to an over-expenditure of feeds. For instance, as a result of unbalanced feeds in terms of albumen alone, the expenditure of feed on the production of one quintal of milk exceeds the zootechnical norms for the kolkhozes of the republic on the average by 35 to 40 percent, and of meat by 30 to 35 percent. The procurement of feeds of a certain quality in terms of fodder units, protein and carotene is stipulated in the plan for development (production program) of the farm. However, their quality is not taken into account when the feeds being carried over to the subsequent year are being evaluated. Zonal agrotechnical laboratories are usually not in a position to determine the quality of feeds systematically and with operations effectiveness. Hence, it is necessary, in our view, to organize special regional laboratories to determine the quality of feeds at all stages of their production and storage.

In order to provide for accounting for the quality of feeds, one must also supplement initial accounting and bookkeeping with a number of indicators such as the content of digestible protein, calcium, phosphorus and carotene.

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\* "Spravochnik po bukhgalterskomy uchëtu v sovkhozakh i drugikh gosudarstvennykh sel'skokhozyaystvennykh predpriyatiyakh" [Handbook for Accounting on Sovkhoses and at Other State Agricultural Enterprises], "Kolos", 1965.

The quality of feeds must be reflected both during the drafting of plans, as well as during the compilation of annual reports. The introduction of indicators for the quality of feeds will enable one to increase supervision over the rational expenditure of feeds and will promote a reduction in the production cost of animal husbandry output.

Pasturable feeds occupy a significant share in the structure of expenditure of feeds. In this connection, the accurate and precise accounting of pasturable feeds is assuming great importance. In conformity with the methods directives of the USSR Ministry of Agriculture, the amount of pasturable feeds utilized by means of pasture is not credited to the account "Output of Agricultural Production," but is copied directly into the expenditures of livestock breeding from the account "Plant Growing." This leads to a situation where they do not include the production of pastures and meadows that is used for pasture in the total volume of gross production of plant growing. Such a situation does not provide an opportunity to compute labor productivity precisely and also does not provide an incentive for the farm to contribute additional funds to the improvement of pastures. It is our opinion that all pasturable feeds must be credited to the make-up of agricultural production in order to eliminate such a situation.

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## AID AND INCENTIVES FOR THOSE WHO MAINTAIN PRIVATE LIVESTOCK URGED

Moscow ZHIVOTNOVODSTVO in Russian No 12, Dec 79 pp 11-13

[Article by P. F. Kozlov and I. A. Sokolov, economists of the Main Administration for Kolkhoz Organizational Affairs of the RSFSR Ministry of Agriculture: "An Important Source of Food Resources"]

[Text] The importance of the development of the private plots of kolkhoz farmers, workers and office workers was stressed at the July (1978) Plenum of the CPSU Central Committee, while at the November (1978) Plenum of the CPSU Central Committee, Comrade L. I. Brezhnev, general secretary of the CPSU Central Committee and chairman of the Presidium of the USSR Supreme Soviet, said: "It is necessary to lend more assistance to these plots in the acquisition of young animals and in supplying them with fodder. It is also required that we create a definite social climate in which kolkhoz farmers and employees of sovkhoses would feel that by raising household livestock and poultry, they are performing work that is of use to the state."

Many kolkhozes and sovkhoses will conduct purposeful work on rendering assistance to workers of the village in the development of their private subsidiary farms as they implement the directives of Comrade L. I. Brezhnev and the decree of the July (1978) Plenum of the CPSU Central Committee on this question.

A good example is being set in this respect by the Borets za Kommunizm Kolkhoz of the Morozovskiy Rayon of Rostovskaya Oblast. Here, as on many other kolkhozes of the oblast, the number of head of all types of livestock, particularly of cows and pigs, had been sharply reduced during recent years on the private plots of kolkhoz farmers. The work being conducted by the board, the Party organization and local committee of the trade union on replenishing the number of head of livestock failed to yield the necessary results. The kolkhoz farmers refused to keep animals in their own household farmyards.

Then the managers of the kolkhoz decided to set a personal example. The families of the chairman of the kolkhoz N. I. Voronin, of chief specialists M. A. Semchenko, N. M. Shurkhovtsev, A. M. Chuvayev and A. Ya. Yunev and of brigade leaders N. K. Tkachenko, T. N. Kurenkov and N. P. Slavenko, and others acquired cows and pigs.

Soon after, the ordinary kolkhoz farmers also followed their example. There are 379 households on the kolkhoz and each of them now has a cow, fattens two pigs a year and keeps poultry. During the discussion of the results of the July (1978) Plenum of the CPSU Central Committee, each kolkhoz family decided to fatten 50 ducks for the state each year. Many workers on the farm have, as of now, already fulfilled their commitments and have sold 50 to 70 ducks.

In helping kolkhoz farmers to maintain livestock on their own plots, the kolkhoz is displaying concern also for providing it with fodder. Last year, for instance, there were 2.8 tons of grain and almost 2 tons of coarse feed sold on the average for each kolkhoz household. During the summer, the livestock of the kolkhoz farmers is sent out to graze on the kolkhoz's pasture lands free of charge. The farm has allocated 348 hectares of meadows at its disposal for these purposes.

The kolkhoz farmers sell all the surpluses of their own output to the state. A portion of the surpluses of meat, potatoes and vegetables is sold by the kolkhoz farmers at kolkhoz markets and, in this instance, the farm places its own transport at their disposal.

The Presidium of the Union Council of Collective Farms [Kolkhozes] and the Board of the RSFSR Ministry of Agriculture have examined the level of development of private subsidiary farms of kolkhoz farmers, workers, office workers and other citizens in Ul'yanovskaya, Ryazanskaya and Kurskaya oblasts. In these oblasts the private subsidiary farms of kolkhoz farmers and the other rural populace produce more than a half of all potatoes, almost a third of the share of meat and a quarter of the milk. Purchases of potatoes from the rural populace in Kurskaya Oblast exceed 120,000 tons a year.

Experience shows that in those places where proper attention is paid to the development of the plots of kolkhoz farmers, they indeed become a considerable supplementary source of foodstuffs and raw-material resources.

The board, Party organization and local committee of the trade union of the Kolkhoz imeni Lenin in the Rybnovskiy Rayon of Ryazanskaya Oblast are continually discussing questions connected with the development of subsidiary farms. The requests by kolkhoz farmers for the acquisition of heifers, piglets and chickens are being fully satisfied. The kolkhoz allocates pastures for the livestock being kept by rural workers, sells forage grain and coarse and succulent feeds at production cost and places at the disposal of farmers draught animals, equipment and means of transport for the cultivation of private plots, the procurement of fodder and the sale of production surpluses.

Constant concern for the development of private subsidiary farms has had a positive effect on the growth of the number of head of livestock, on raising its productivity and on increasing the sale of the surpluses of products. Each kolkhoz household sells up to 1.5 tons of milk, 150 to 200 kg of meat and many potatoes and vegetables to the state annually.

The Krasnoye Znamya Kolkhoz of Ryazanskiy Rayon, the Kolkhoz imeni Suvorov of Mikhaylovskiy Rayon and the Dobrovolets Kolkhoz of Shilovskiy Rayon are also

helping kolkhoz farmers in acquiring animals, are showing concern for providing them with various feeds and are rendering assistance in the sale of production surpluses.

And in Ul'yanovskaya Oblast many kolkhozes are rendering all-round assistance to kolkhoz farmers in managing their private plots. The Druzhba Kolkhoz of Maynskiy Rayon annually sells piglets, heifers and chickens to its workers, provides the animals with feed and performs the plowing of kitchen gardens. The members of the kolkhoz annually sell to the state more than 200 head of cattle, more than 170 pigs and much poultry. At the same time, there are great shortcomings in the development of the subsidiary farms of rural workers. In Ryazanskaya Oblast a significant portion of kolkhozes do not provide the livestock of kolkhoz farmers with fodder resources and do not render them assistance in the acquisition of young livestock and poultry. The issue and sale of fodder to workers in the countryside has been substantially reduced in the oblast. This has led to a reduction in the number of head of livestock among them. There are now 0.4 cows and as many pigs per one kolkhoz household in the oblast. The situation is also no better in Ul'yanovskaya Oblast, where the kolkhoz household has on the average 0.5 cows and one pig per five households. There is only one explanation for such a situation—namely, the unsatisfactory status of the organization of fodder production in these oblasts. For a number of years now, both these oblasts have been failing to fulfill plans for the procurement of coarse and succulent feeds. And all sorts of consequences have been arising from this. In Ul'yanovskaya Oblast many farms are paying insufficient attention to increasing the production of potatoes and vegetables on private plots.

In a number of regions of the Russian Federation the development of subsidiary farms is being held back owing to difficulties connected with the acquisition by kolkhoz farmers of heifers, piglets and poultry. Many kolkhozes that specialize in the production of beef, eggs and poultry meat have unjustifiably eliminated that number of head of swine necessary for the production of pork for internal economic needs. It is true that individual farms have begun to restore these rather small consumer pig farms. Their task is not only to produce pork for the needs of the farm, but also to provide the kolkhoz farmers with piglets.

It would seem that it is a good initiative and that one need only welcome it. However, there are cases of another sort of treatment of this matter. In a number of instances, rayon organizations, upon learning of the creation of such farms on kolkhozes, immediately increase their plans for the sale of meat to the state. As a result, the farms are forced to put all the piglets obtained out to be fattened up and then to sell the hogs to the state. Such cases have been recorded in Penzenskaya Oblast. They are also taking place in Smolenskaya Oblast. The Kolkhoz imeni Radishchev in Gagarinskiy Rayon is engaged in the growing of young calves that still have not given birth and in the production of beef. There is also a rather small pig farm here. But last year not a single piglet was sold to the kolkhoz farmers. All the young animals obtained on this farm were supplied for fattening and but with a rather small exception all were turned over to the state.

But there are also those kolkhozes which do not receive additional plans for the sale of meat to the state in connection with the organization of consumer hog-breeding farms and which, all the same, do not fully satisfy the demand by kolkhoz farmers for piglets.

However, some kolkhozes have also found a way out of this. A good example of a solution to this problem is being set by the Kolkhoz imeni Kuybyshev of the Gorodetskiy Rayon of Gor'kovskaya Oblast. Hero of Socialist Labor M. I. Treushnikov, chairman of this kolkhoz, told us that their farm is specializing in the production of poultry meat; hence, it does not have its own hog farm. Despite this fact, the requests by kolkhoz farmers for piglets are fully satisfied. For this purpose, the board of the kolkhoz has reached an agreement with a number of retired kolkhoz farmers on having them start to keep sows and then having them sell the piglets obtained from them to kolkhoz farmers upon orders from the board. A number of pensioners have responded to this request and the farm has not only supplied them with pedigree sows, approximately two per head, but also with fodder. They turn over the young animals obtained at the age of two months to residents of the village at state procurement prices—2.5 rubles for 1 kg of live weight.

The recruitment of pensioners for this most important work has solved the problem of young animals. Now each kolkhoz household, as a rule, fattens two pigs a year. One for itself and the second for the state. On the average, a kolkhoz family now sells 2 quintals of meat (pork, beef, poultry) a year to the state and cooperative. They also sell a large quantity of milk, vegetables and potatoes. In other words, the state additionally receives annually almost 900 quintals of meat and even more milk, potatoes and vegetables from the private subsidiary farms of the kolkhoz.

The Kolkhoz imeni Kuybyshev also provides the livestock of the kolkhoz farmers with fodder: annually it sells them grain and coarse and succulent feeds.

Kolkhoz farmers produce the missing portion of the fodder on their own private plots. The kolkhoz places equipment at their disposal for the cultivation of kitchen gardens and in those place where it is not convenient to use it, it places draught animals at their disposal.

Kolkhoz farmers grow potatoes, mangel wurzel, onions and vegetables on their own plots. The kolkhoz farmers are provided with planting tubers by the farm. Specialists from the kolkhoz are continually replacing one strain of tuber with another.

The practices of the Kolkhoz imeni Kuybyshev in rendering assistance to the workers of the countryside in the development of subsidiary farms have encountered support not only on the farms of Gor'kovskaya Oblast, but also on the farms of a number of other oblasts of the Russian Federation.

On the Rodina Kolkhoz in the Vologodskiy Rayon of Vologodskaya Oblast, all the workers of the villaged are provided, upon their requestion, with piglets,



heifers and fodder. On the Gigant Kolkhoz in the Kuznetskiy Rayon of Penzenskaya Oblast, pensioners, upon instructions from the board of the kolkhoz, annually raise and sell up to 300 piglets to their fellow-villagers, while the kolkhoz itself provides livestock that is in the personal use of workers of the village with various feeds in sufficient quantity.

Last year pensioners on the Kolkhoz imeni Radishchev in the Gagarinskiy Rayon of Smolenskaya Oblast handed over 250 piglets to their neighbors for fattening and now plan to turn over more than 300.

The board of the Krasnyy Mayak Kolkhoz in the Gorodetskiy Rayon of Gor'kovskaya Oblast is displaying great concern over raising the productivity of cattle to be found in the personal use of kolkhoz farmers. This farm specializes in raising pedigree animals of the black-mixed breed. The kolkhoz restocks its farms annually with highly-productive young animals. And the kolkhoz exchanges the cows bred by virtue of this with a yield of 3,000 to 3,500 kg of milk a year for low-productivity cows in the possession of kolkhoz farmers, which it then turns over for meat.

Such an important problem as the sale by kolkhoz farmers of the surpluses of products being produced by them on their private plots has still not been fully solved in a number of regions of the country. The workers of villages remote from cities and workers' settlements are in a particularly unenviable situation. It is true that here and there kolkhozes help kolkhoz farmers in the sale of the surpluses of their products by allocating transport for these purposes. But this is inconvenient for rural workers as well as for the farms. The kolkhoz farmers must be diverted from work, while it is necessary for kolkhozes to divert transport from their own shipments. Consequently, the task is one of organizing purchases of surpluses of agricultural production locally among the population.

There is already experience in this area. In many oblasts of the Ukraine, for instance, rural cooperative members have their own procurement workers in each population point—one for every 250 to 300 kolkhoz households. The procurement workers have been provided with transport (vehicles with draught animals, motorcycles with side-cars), warehousing facilities and cellars. Each day they go around to those under their wardship, buying eggs, poultry, meat, potatoes and vegetables from them. They also conduct two-way trade. They haul the production that has been purchased in the villages out with motor vehicles of the consumer cooperative or of those who work on the round-trip routes.

Dairy combines, following the example of the cooperative members, have also begun to keep their own collectors in each village. And this has had a positive effect on the purchasing of milk from the populace. The purchases have increased markedly.

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## EVALUATION OF BREEDING AND PRODUCTIVE QUALITIES OF CATTLE

Kishinev SEL'SKOYE KHOZYAYSTVO MOLDAVII in Russian No 11, Nov 79 pp 31-32

[Article by A. Dolgov, doctor of agricultural sciences, head of the Dairy Cattle Breeding Laboratory at the Scientific-Industrial Association, "Zarya", and by N. Podgornaya, junior scientific associate at "Zarya"]

[Text] The crucial role in creating a genetic potential for high dairy productivity is reserved for bull-sires which are being put to use at state breeding stations of the republic.

On the day of the evaluation, there were 122 sires of the black-spotted breed. The average milk yield of their mothers--5430 kg (butter-fat content of the milk: 3.94 percent), and the milk yield of the mothers of their fathers was accordingly 5962, (4.41 percent butter-fat). In addition, there were 27 bulls of the Holstein-Friesian breed with average milk yields of their mothers 7424, (3.79 percent), and for mothers of their fathers 8358 kg, (3.84 percent butter-fat).

Cross-breeding of such valuable bull-sires with local cattle of the red-steppe and Simmental breeds makes it possible to obtain from each cow of even the first generation an average of 4000 kg of milk, and from each of the second 4500 kg.

But, the genetic potential of milk productivity is one thing, and its practical realization is quite another. According to the calculations of specialists, an increase in the level of cattle milk productivity depends 60 percent on the quantity and quality of the cattle, 25 percent on breeding work, and 15 percent on technology of production and conditions of livestock maintenance.

Evaluation data from the previous year confirm that the difference between the practical level of cattle milk production and their genetic potential is explained primarily by inadequate feeding of the livestock.

Cattle of the black-spotted breed have an advantage by comparison with red-steppe and Simmental of 200 to 300 kg. Butter-fat content of milk is

practically the same for all breeds; live-weight of fully grown cattle of the black-spotted breed is 36 kg greater than that of the red-steppe, and does not differ from the Simmental.

Evaluation conducted according to adaptability of livestock to the requirements of new technology showed the following: black-spotted cows with the scyphiform type of udder (better for machine milking) were 20 to 30 percent higher in terms of adaptability than red-steppe and Simmental; speed of milk delivery with the former was 0.3-0.6 kg per minute; with regard to optimal teat size for machine milking, the black-spotted was again 20 to 30 percent higher in adaptability than the red-steppe and particularly, the Simmental cattle; in return of milk from feed, the red-steppe and the black-spotted occupy essentially the same position (1.1-1.2 feed units per kg of milk), while the Simmental consumes 0.2-0.3 feed units more per kg of milk.

The average milk yield per cow on the farms where black-spotted cattle are bred, in 1978 totaled 3631 kg; for red-steppe cattle 3109. The advantage of black-spotted cattle in milk productivity is observed constantly; for all breeding farms of the republic it is 200 to 300 kg greater than with local breeds. Where feeding conditions are relatively good, black-spotted cattle possess a remarkable advantage by all economic-use indicators.

On sovkhoses, "Malayeshtskiy", "Mikhalashanskiy", and the kolkhoz, "19th CPSU Congress", of the Brichanskiy Rayon, from 4000 to 4500 kg of milk was obtained per cow. On the kolkhoz imeni Michurin, in the Slobodzeyskiy Rayon, within the boundaries of a single farm, black-spotted cattle show a yield 800 kg greater than red-steppe cattle.

On farms with substandard feeding levels, black-spotted cattle do not possess an advantage in comparison with livestock of local breeds.

There exists in the republic a farm (the foremost enterprises, scientific-industrial association, "Dnestr"), on which cattle of the Ayrshire breed are bred. Last year here, 4500 kg of milk per cow (4.2 percent butter-fat) were obtained.

On several Ministry of Agriculture sovkhoses in the republic, cattle of the Simmental breed are being cross-bred with Ayrshire bulls. Hybrids from the first generation of this crossing show increased milk yield of from 200 to 400 kg and increased butter-fat percentage of from 0.3 to 0.4. Furthermore, the better the shape of the udder in these hybrids, the higher the rate of milk delivery. On the sovkhos, "Moldavanka" in the Faleshtskiy Rayon, the average milk yield at first lactation from 167 first-generation hybrids last year was 3675 kg (4.2 percent butter-fat), which should be considered an outstanding result.

The general conclusion: first-generation hybrids, obtained from cows of the red-steppe and Simmental breeds and bulls of the black-spotted breed, as well as from Simmental cows and Ayrshire bulls given satisfactory (or

especially excellent) maintenance, possess a distinct advantage in terms of milk productivity and significantly better adaptation to the conditions of industrial technology.

The weakest link in the entire system of cattle improvement work is calf-raising. More than 100,000 heifers passed through the evaluation. Their live weight at 18 months was 300 kg, independent of breed classification. This is quite small.

In order to obtain from each cow an average of 4,000 kg of milk per year it is essential that the live weight of heifers at the 18-month stage be 340 to 360 kg. They must be inseminated at 16-18 months. On many farms of the republic, heifers are inseminated upon achieving a weight of 330-340 kg, as a rule, at the age of 2 years and older.

The use of progressive methods shows that heifers bred later than 22 months, even with high live weight, do not achieve particularly high milk yielding capability. The most intensive growth of muscle and bone tissue, as well as of internal organs takes place in the 6 to 14-month stage. It is precisely in this period that maximum attention must be given to feeding of heifers. After the 20-month stage, even with excellent feeding, weight gains occur mainly in the form of inert tissue.

One of the most important tasks in the matter of increasing the milk productivity of cows is the development and implementation of a program for raising heifers to the required developmental levels, which has, of necessity, been approved for the raising of dairy cattle specifically.

During the evaluation of the livestock (30 percent of the cows of the general sector and about 20 percent of the heifers were evaluated), major difficulties arose due to a poorly formulated zootechnical report. On many farms, the number of livestock was not established, controlled milk yield of cows was not practised, the butter-fat content of the milk was not determined, and card indices for cows were not maintained. An especially great responsibility rests with the specialists of the inter-kolkhoz enterprises, to which heifers are transferred from the farms. But frequently heifers come in without numbers, individual index cards are filled out incorrectly, as a result of which the selection of animals for insemination is carried out simply by an external examination, without reference to the growth and weight record.

What did the evaluation of the cattle show? First of all--first-generation hybrids of the black-spotted and Ayrshire breeds possess an important advantage over local breeds, both in milk productivity and in adaptability to industrial technology. Consequently, a proper breeding base is being established. The study revealed 462 cows with a milk yield in excess of 5,000 kg, including 62 with a yield of more than 6,000 kg. The time is not far off when there will be in the republic a representative number of locally produced bulls.

The periodic evaluation of livestock for breeding and productive qualities provides material for correcting breeding operations plans. In this respect, the zootechnician-breeder becomes the central figure not only on breeding farms, but on commercial milk farms as well. The most highly qualified specialists, having sound knowledge of their field, should be appointed to this post.

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## NEW CATTLE BREEDS DEVELOPED TO INCREASE PRODUCTION

Vishinev SEL'SKOYE KHOZYAYSTVO MOLDAVII in Russian No 11, Nov 79 pp 33-34

[Article by I. Saliy, candidate of agricultural sciences; G. Muntyanu and I. Miron, senior scientific associates of the scientific production association, "Zarya": "A Breed for the Complexes"]

[Text] The work being carried out in the republic on cross-breeding of red-steppe and Simmental cattle with black-spotted and Holstein-Friesian bulls is yielding positive results. The preliminary data obtained serve as an important genetic prerequisite for the creation of a new type of cow suitable for industrial milk production.

According to the data from our investigation, the crossing of hybridized Jersey/red-steppe cattle with Holstein-Friesian bulls produces a significant increase in milk-producing capacity and an improvement in the rate of milk delivery, although butterfat content is somewhat reduced in this regard. Accordingly, on the sovkhos, "Mikautsy" in Strashenskiy Rayon, hybrids of three breed lines give, for the first two lactations, an average of 600.4-886.5 kg of milk more than two-breed Jersey/red-steppe cattle of the same age (see table). One three-breed hybrid cow gives, in the first two lactations, an average of 37.8 kg of milk fat more than a two-breed red-steppe.

Breeds	Number of head	Lacta- tion	Milk yield kg	Butter- fat percent	Butter- fat kg	Live wt kg
Red steppe	191	1	3013	4.65	140.1	446
(Hybrid from Jersey cross)	115	2	3060	4.63	141.7	489
Hybrid - red-steppe	33	1	3245	4.36	141.5	429
Jersey/black-spotted, F <sub>1</sub>	27	2	3438	4.20	144.8	484
Hybrid - red-steppe	134	1	3613	4.38	158.2	466
Jersey/Holstein-Friesian, F <sub>2</sub>	29	2	3946.5	4.09	161.4	497



Three-breed heifers on this farm develop just as calves of their mother's breed of the same age up to the 6-month stage by 18 months, they surpass them by 13.3 kg.

Second generation ( $F_2$ ) Holstein-Friesian heifers slightly surpass their analogs of the first generation in live weight at all growth stages, and at 18 months weigh 331.3 kg--3.81 percent more than hybrids of the first generation. Hybrids of the first generation consume 0.37 feed units more per kg of weight gain than hybrids of the second generation.

These data testify to the fact that the crossing of Jersey/red-steppe hybrid cattle with black-spotted and Holstein-Friesian bulls does not lower meat quality in the progeny. In an experiment involving the feeding of neat cattle (the sovkh. "Pogranichnik" in Karul'skiy Rayon), half-breed black-spotted bullocks given intensive development from the 20-days to the 16-month growth stages, weighed 453.5 kg--12.3 percent more than red-steppe calves of the same age. In terms of yield at slaughter, hybrid bullocks are almost indistinguishable from red-steppe, but in caloric value of their meat, they exceed the latter by 6.5 percent. Thus, given intensive development, each half-breed black-spotted bullock returned a profit on average 113.2 rubles greater than the red-steppe.

On the basis of our observations and the data of other authors, Holstein-Friesian sires have a beneficial effect on Jersey-cross hybrid cattle. Accordingly, a new type of dairy cattle is being introduced in the GDR by crossing black-spotted cows with Jersey and Holstein-Friesian bulls. In Moldavia, each three-breed hybrid cow imported from the GDR gives 4-5,000 kg of milk with a butterfat content of 4.0-4.33 percent, and yields 95-132.3 kg of milk fat more than local Simmental and black-spotted cows of the same age. The imported cows are characterized by a steady milk yield and a uniform lactation curve. The variability of butterfat percentage among three-breed hybrids is significantly higher (8.19 percent) than among local breeds (2.48-3.15 percent), which points to the possibility of selecting for this trait.

Black-spotted/Holstein-Friesian hybrids are also yielding acceptable results on the sovkh. "Mikhalashanskiy" in Oknitskiy Rayon. In this herd, two-breed hybrid prime heifers ( $n=91$ ) yielded an average of 3897.3 kg of milk--309.3 more than pure-bred black-spotted heifers of the same age. Particularly good results were obtained with the bull, Bars 326 089 (Reflection Sovering 198 998 line). His daughters ( $n=47$ ) at first lactation have given 4103.2 kg of milk with 3.63 percent butterfat (live weight 463 kg).

However, cross-breeding has not yielded favorable results in all combinations. On the sovkh. "Mikhalashanskiy", 44 half-breed daughters of Acme 93 (Sailing Trijet Rocket 252 803 line) at first lactation yielded 3677.3 kg of milk (butterfat 3.65 percent)--89.3 kg more than purebred black-spotted cows of the same age. Differences between the groups in regard to butterfat content of milk and live weight are not observed. A similar pattern has also been noted in the herd kept at the Karmanovski veterinary sovkh. technical school.

More than 50,000 half-breed Holstein-Friesian cows, which yielded during initial lactation 25,000 tons of milk more than red-steppe and Simmental cows of the same age, are presently in lactation in the republic. Replacing the republic's entire herd of dairy cattle with Holstein-Friesian hybrids would provide a supplemental increase of more than 100,000 tons of milk.

In summation, one may make the following conclusions:

--Three-breed crossing of red-steppe and black-spotted cattle with Holstein-Friesian and Jersey bulls boosts milk yields at lactation by 600-900 kg, increases the output of milk fat by 37.8 kg, and reduces feed costs for production of each litre of four-percent milk by 9.8 percent;

--Two-breed crossing to a lesser extent (by comparison with three-breed) increases yields (by 306-309 kg), while the output of milk fat is lifted by 4.6-11.2 kg at first lactation;

--Three-breed and two-breed crossing produces hybrids with improved udder conformation and greater adaptability to machine milking in industrial stockbreeding operations;

--In order to establish a new type of dairy cattle for the complexes, we recommend that two-breed and three-breed crossing of local cattle with Jersey and Holstein-Friesian (Hollandian) sires be conducted up to the second/third generations, with subsequent inter-breeding of the hybrids.

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## INDUSTRIALIZED POULTRY RAISING IN ODESSKAYA OBLAST

Moscow IZVESTIYA in Russian 20 Dec 79 p 1

[Article by staff correspondent F. Chernetskiy: "Avipolis [Poultry City] at the Estuary"]

By the end of the Five-Year Plan, the production of poultry meat in Odesskaya Oblast will almost quadruple and will reach 50,000 tons a year.

[Text] It wasn't too long ago here that the wind would wander at will along the empty shoreline of the Grigor'yevskiy Estuary, right? During the past three years, everything in the district has changed so as to make it unrecognizable. A port has sprung up here. On the spot at the edge of the estuary, hardly off the side of the Odessa-Nikolayev road, parts of the building complex of the Chërnomorskaya [Black Sea] Poultry Factory are rising right before one's eyes. Not long ago, substantially earlier than the specified deadlines, its first section, slated for 350,000 broilers, went into operation.

"According to the plan," says G. Karkashadze, manager of the Odespromstroy [Odessa Industrial Construction?] Trust, "the factory is to be turned over fully for operations in 1982. But our collective is making every effort to complete all the work as early as next year."

Meanwhile, M. Kisil', director of the Odesptitseprom [Odesskaya Oblast Administration of the Poultry-Raising industry] Trust, tells us what this "poultry city" is like:

"The factory, the plan for which was drafted by the Odessa branch of the UkrNIIPromsel'khoz [Ukrainian Scientific Research Institute for Industrialized Agricultural Production?] Institute, will be the largest enterprise for the production of poultry meat not only in Odesskaya Oblast, but also in the Ukraine. It will produce 8,000 tons of poultry meat a year, for which it will be necessary to raise 5,600,000 broilers. They are to receive 2,500 tons of meat here as early as next year."

In his address at the November (1979) Plenum of the CPSU Central Committee, Comrade L. I. Brezhnev stressed: "Concrete measures directed toward the development of animal husbandry were examined in depth at the July (1978) Plenum of the CPSU Central Committee. Implementing the decisions of the Plenum and substantially increasing the production of meat in the country are the very first duties of the managers of the agricultural sector, of local Party and Soviet organs, specialists and of all employees of animal husbandry."

"The experience of the Chërnomorskaya [Black Sea] Poultry Factory visually testifies to the fact that the plans of the Party are being realized," says A. Taranenko, secretary of the Odesskaya Oblast Party Committee. "Two years ago a comprehensive program was approved in the oblast for the development of poultry-raising to obtain meat. What goals does the program set? We are faced with almost quadrupling the production of poultry meat, thereby calculating on raising its output to 50,000 tons by the end of the five-year plan."

It is now possible to cite some results at the finish of the fourth year of the five-year plan. In 1977 a little more than 12,000 tons of poultry meat was obtained in the oblast. Last year the increment amounted to 10,000 tons. The production of poultry meat now reaches 30,000 tons. This is an appreciable improvement—in two years the volume of production increased to two and one-half times what it had been. Here's still another very important detail: almost half of the total increment in meat production was obtained by virtue of poultry.

It is important that a solid foundation is being laid in the oblast for the development of poultry-raising. Particular attention is being paid to a pedigree maternal flock: a far-flung network of reproduction farms is being created. The largest pedigree breeding reproduction facility in the Ukraine is being built in the village of Starokozatskoye, where there will be 250,000 hens. The incubator stock will be replenished by five major new incubator stations.

The kolkhozes of the oblast have also actively enlisted in the work. They will provide more than half the entire supply of poultry meat. There are now 12 broiler factories being built on kolkhozes, each of which will be able to admit 500,000 to 1,000,000 chickens a year. The modernization of existing poultry factories and poultry farms is proceeding at an accelerated rate.

They are doing a good job of solving the problems of the development of poultry-raising to obtain meat on the farms of Belgorod-Dnestrovskiy and Razdel'-nyanskiy rayons. The tone is being set in the socialist competition of the oblast's poultry raisers by the collectives of the Kirovskaya and Kagarlyk-skaya poultry factories, by the Pobeda Kolkhoz in Ivanovskiy Rayon and by the Kolkhoz imeni XX S"yezd KPSS in Kominternovskiy Rayon. They are coping successfully with the planning quotas and socialist pledges.

The implementation of the comprehensive program for accelerated development of poultry raising has required profound study and effective practical

measures to strengthen the fodder base, to increase the capacity of the poultry-processing enterprises and to improve the skills of the labor force. Great organizational work has been carried out and those "construction starts" have been created which, by relying upon them, will enable one to take a broad step forward toward the specified goal of raising the annual production to 50,000 tons of poultry meat.

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## SPECIALIZATION IN POULTRY RAISING IN VITEBSKAYA OBLAST DETAILED

Minsk SEL'SKOYE KHOZYAYSTVO BELORUSSII in Russian No 12, Dec 79 pp 13-14

[Article by V. F. Alekseyev, general director of the Vitebsk Poultry-Raising Production Association: "The Impact of Specialization"]

[Text] The Vitebsk Poultry-Raising Production Association was created five years ago. Consolidation of the sector has enabled one to improve the allocation of funds and forces, to lift breeding operations to a much higher level and to assimilate in production the achievements of science and the practices of the country's foremost poultry breeders in an operations-effective manner. But the main thing is that production indicators have improved sharply. As each year goes by, the output of gross production has increased and the economic efficiency of the sector rises. Last year, for example, farms produced 159,256,000 eggs, which was 1,651,000 more than in 1977. The target for the four years of the 10th Five-Year Plan for sale of output was fulfilled ahead of schedule. In 1979 they will supply the state with 217 million eggs and more than 4,000 tons of meat.

An increase in the production of eggs has been provided for chiefly by virtue of a rise in the productivity of hens. There were 241 eggs received per one laying hen, which is higher than the plan and more than the level for the previous year. The foremost enterprises, the Trostnitsa (director P. V. Kazarovets) and the Glubokoye Poultry-Raising Factory (director A. D. Kot), obtained 244 and 243 eggs respectively per laying hen.

Even better indicators have been achieved by individual poultry-maids of the association. Lidiya Konstantinovna Shimanovich and Nina Iosifovna Filatarina from the Glubokoye Poultry Factory obtained 250 and 253 eggs per one laying hen, while Galina Yegorovna Savryna from the Gorodok Factory obtained 270 eggs (average number of laying hens is 17,680).

At the July Plenum of the CPSU Central Committee (1978), Leonid Il'ich Brezhnev, general secretary of the CPSU Central Committee, said: "Until recent times priority in poultry raising has been assigned in the direction of eggs and the problem of supplying the populace with eggs has, in the main, been solved. The means of the sector are now being concentrated on increasing

the production of poultry meat. During the next few years major enterprises for raising chickens, ducks, turkeys and geese for meat production will be put into operation. At the same time, much can be done as well at existing poultry factories by virtue of modernizing them and expanding their capacities...."

In implementing the decisions of the July Plenum of the CPSU Central Committee, the poultry raisers of the association are doing everything in order to increase sharply the production of meat from poultry. As early as last year, an increment of 21,435 quintals in the live weight of young hens and a gain in weight of 5,375 quintals in ducks was obtained. The average daily increment in the live weight of poultry amounted to 10.5 grams, which is higher than the indicator that had been planned. The leading poultry-maids have achieved substantially greater average daily gains in the weight of the poultry. For instance, Serafima Dmitriyevna Rogacheva, who raises chickens in cages, obtained on the average a gain in weight of 11.4 grams, while Zoya Ivanovna Pilipenok, who watches after chickens who are being fattened, obtained an increment of 15.3 grams. The poultry raisers of the association have saved 548 tons of fodder units and by virtue of this have additionally obtained 104 tons of meat.

The expenditures of feed on a quintal of gain in weight have been reduced. The expenditures of feed amounted to 563 fodder units during the raising of a young bird from 1 to 120 days at the main Vitebsk Poultry Factory; they amounted to 326 feed units during the raising of broilers at the Gorodok Poultry Factory and expenditures amounted to 349 feed units per quintal of gain in weight during the raising of ducks at the Glubokoye Factory. All told, all the farms in the association obtained 2,681 tons of poultry meat. Its quality improved significantly.

The efficiency of poultry raising is constantly rising. In 1978 output worth a sum of 19,992,000 rubles was produced, or 15,215 rubles when computed in terms of one employee on an average annual basis (with the plan calling for 13,736 rubles). When calculated in terms of 100 rubles of fixed productive capital, the production of output amounted to 105 rubles 75 kopecks (with the plan calling for 103 rubles 85 kopecks) and for 100 rubles of input the production of output amounted to 168 rubles 16 kopecks. The return on investment increased substantially and the capital requirements per ruble of output were lowered.

The production cost of a thousand eggs amounted to 43 rubles 87 kopecks, which is 1 ruble 29 kopecks lower than the planning target and 16 kopecks less than during the previous year.

An improvement in processing methods, mechanization and automation of production processes have enabled a substantial reduction in labor input on the production of a unit of output. If in 1973 (prior to the creation of the association), 4.87 man/hours were expended on the production of 1,000 eggs, then in 1978 1.99 man/hours were expended, while 1.87 man/hours have been expended for the 9 months of the current year; 24.3, 10.8 and 10.7 man/hours

were expended respectively for 1 quintal of gain in weight. The profit almost doubled in comparison with 1973 and amounted to 8,158,000 rubles in 1978.

Narrow specialization and consolidation of production within the framework of an association have enabled an increase in production and in the sale of dietary output: eggs by 60 percent and poultry meat by 49 percent.

During the 10 months of this year, 206 million eggs and 3,608 tons of poultry meat have been produced. The plan for the sale of eggs and meat was fulfilled by 106.8 and 106.3 percent respectively. This inspires confidence in us that the pledges which have been made in the fourth year of the 10th Five-Year Plan will be fulfilled with honor.

The poultry raisers of the association are now striving to increase production indicators even more. However, there are many factors whose causes are not subject to our control that are impeding this. Everyone knows that scientifically sound feeding is of great importance in increasing the productivity of poultry. Unfortunately, mixed feed enterprises frequently deliver fodder that is not balanced in terms of amino-acid composition and in terms of the energy-protein ratio. It is necessary to do additional reworking of it at the farm, expending much unnecessary time and funds thereon.

There are also many other unresolved problems. There is an urgent need to expand the warehouse for eggs and to carry out modernization of the slaughter shop at the Orsha Poultry Factory, to build a feed shop and sewage treatment installations at the Glubokoye and Trostnitsa poultry factories, to build an incubation shop and production facilities for 350,000 to 400,000 seating places at the Vitebsk Poultry Factory, to speed up the construction of the Shumilino Pedigree Poultry Reproduction Enterprise, etc. The performance of this work will provide an opportunity not only to anchor in a secure and stable manner that which has been achieved, but also to increase the production of eggs by more than 80 million eggs and of poultry meat by 1,800 to 2,000 tons.

The successful solution of these problems would enable the poultry raisers of the association to utilize more fully all our potentials for a further increase in the production of output and for a rise in the efficiency of the sector.

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## NEW POULTRY COMPLEX BEING BUILT IN ODESSKAYA OBLAST

Moscow TRUD in Russian 11 Jan 80 p 1

[Article by Ye. Zabortsev: "The Largest Poultry Factory"]

[Text] The first section of the largest broiler factory in the Ukraine has gone into operation in Odesskaya Oblast. It will turn out 2,500 tons of meat a year. The planned capacity for the entire factory is 8,000 tons.

"The construction of the entire broiler factory complex must be finished this year," M. Kisel', director of the Odesptitseprom [Odesskaya Oblast Administration of the Poultry-Raising Industry] Trust, tells us. "The poultry yards have been outfitted with modern equipment."

There are 16 poultry factories in Odesskaya Oblast that are now being modernized or built. Before long the modernized Odesskaya Poultry Factory will go into operation. It is now producing 45 million eggs, but with the commissioning by the end of the year of two sections for 200,000 laying hens, it will turn out 100 million eggs a year. By the end of the year, the Belgorod-Dnestrovskaya Broiler Factory, with a productivity of 6,000 tons of meat a year, will also begin to yield output.

The Odessa animal husbandry workers must reach a production frontier of 50,000 tons of poultry meat a year by the end of the five-year plan.

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## FURTHER DEVELOPMENT OF GRAIN CROP IN NONCHERNOZEM ZONE

Moscow SEL'SKOYE KHOZAYSTVO ROSSII in Russian No 11, Nov 79 pp 35-36

[Article by K. Budin, academician of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin: "The Grain Area of the Nonchernozem Region"]

[Text] The Russian nonchernozem region is a vast agricultural zone where there are 47 million hectares of agricultural land, including 31.7 million of plowed fields. So far, however, less than 50% is being allotted here to grain and leguminous cultivation. Nevertheless, the gross yield of grain in recent years reached 24.3 million tons. In other words, its average annual production increased by 24% compared with the 9th Five Year Plan. These are the first successes in response to the concern of the party and government over the comprehensive reorganization of this zone's agriculture. The state is channelling substantial capital here for land drainage and irrigation and for increasing the power supply per production unit, plus a considerable amount of mineral fertilizers and herbicides. A scientifically sound agronomic complex has been developed permitting the growing of high harvests. In using all this skillfully, many farms of the Leninskiy, Domodedovskiy, Mytishchinskiy, and Podol'skiy rayons of Moscow oblast, for example, get up to 40 centners or more of grain per hectare each year. In Tul'skaya oblast, the Kolkhoz imeni "Lenin", Sovkhozes imeni "USSR 50th Anniversary", "Santalvo", "Red Hero", and others are famous for high harvests. The Kolkoz imeni "Karl Marx" of Livenesskiy rayon in Orlovskaya oblast mills in excess of 43 centners of winter wheat on the average. In short, there are already quite a number of farms in the non-chernozem region where, from year to year, the grain harvest exceeds 30 centners per hectare.

Nevertheless, several kolkhozes and sovkhozes and rayons and oblasts of this zone cannot cope with the tasks placed on them and noticeably lag the foremost ones. For example, while Leningradskaya oblast obtained an average of 21.7 centners of grain per hectare during the past five years, Pskovskaya--in conditions comparable to it--had only 12.8. Correspondingly, 25.1 centners were milled in Moskovskaya oblast, but 12.5 in Kaluzhskaya. This means that the nonchernozem region possesses great possibilities for a significant increase of the most important agricultural produce.



If the productivity of the lagging oblasts, autonomous republics, and farms of the zone is raised to the average (20-21 centners per hectare), then the annual gross yield of grain may be 30-32 million tons. There are all possibilities for this: significant areas of reclaimed land, increasing the supplies of mineral fertilizers, an adequate amount of miscellaneous equipment, and highly productive varieties of grain crops. For example, Mironovsaya 808, Jubilee, Il'ichevka, and other winter wheats give up to 40-45 centners of grain per hectare. New varieties are being created with a yield of 55-60 centners.

The new varieties of rye--Khar'kovskaya 60, Belta, Hybrid 173, Leningradskaya Tetra, and Voskhod 1--have received widespread acceptance. On many strain testing plots, the latter has produced 65-70 centners and, according to estimates, it may be grown on 2,000,000 hectares next year. There are promising varieties of winter rye which are successfully going through state quality testing. These are Yaroslavna (the Northwestern Breeding Center), and Golubka and Zvezdochka (the Northeastern Breeding Center). It is possible to increase the productivity of soils by the simultaneous application of organic and mineral fertilizers, liming, and rational cultivation.

Barley occupies first place of the grain fodder crops, both in area and in productivity. In the Moscow, Northwestern and Northeastern Breeding Centers, they are working persistently on the development of new, heavy producing, short stem varieties. At the same time, food values are being raised. For example, the yield of the short stem variety, Fakel, is achieving 45-58 centners in government testing on the strain testing plots of various oblasts. It is resistant to lodging and is distinguished by increased protein content. Work is being conducted on developing barley with a high lysine content. At the breeding center of the Northeastern Scientific Research Institute of Agriculture, Luch has been developed, a strain resistant to lodging and which demonstrated a unique record at the Gatchinskiy strain testing plot of Leningradskaya oblast--70.9 centners per hectare. The earlier ripening barley, Sever I, was developed there, also.

Also, new, highly productive varieties of oats have been developed. Of them, Hercules, developed in the Moscow breeding center, has been zoned and Ruslan is going through state testing. Their potential productivity is 70-76 centners per hectare. Skorospeliy, an oat distinguished by high yield and which matures 4-10 days earlier than its forerunners, was developed and has already been zoned by the breeders at the Northeastern Scientific Research Institute for Agriculture and promising varieties--Yantar', Askar, and Kirovskiy--have been bred.

Concurrent with increasing soil fertility and introducing high yielding varieties, an important factor in increasing the gross yield of grain in the nonchernozem region is increasing the grain allotment by improving the structure of the sown area based on the productivity of individual

crops. By yield, for example, winter wheat occupies first place in the zone, then come barley, spring wheat, oats and winter rye. Like barley, the highest yields of winter wheat are in the Central Region and Kalinin-gradskaya oblast. These crops also hold first place by output of food units. But what is their share of planting? In the Northwestern region, winter crops (wheat and rye) occupy only 2% of the entire planting area of grain and leguminous crops; in the Central Region, 18%. Such a structure of planted areas cannot be justified in any way. Its result is an annual shortage of several million tons of grain.

It is necessary to accommodate various types of grain crops by individual region based on an analysis of many years of phenological observations, productivity in breeding plots and under production conditions. There already are definite efforts in this direction. For example, in the Central Region, the foremost position should be held by winter wheat, the significance of which is growing in connection with the broad scale of drainage and soil improvement operations and increase of soil fertility.

A necessary condition for the further expansion of winter crop planting is the development of carried-over seed stocks. It is impossible not to consider that for individual years, the ripening of these crops either coincides with the optimum planting periods or comes later than them. Moreover, recently gathered seeds germinate slowly and thinning of the young crops is possible under unfavorable weather conditions.

In the central regions of the zone, one is justified in considering in second place, spring barley, the significance of which is growing more and more with the development of cattle breeding. It is also important to keep in mind that fodders of potatoes and barley produce the most efficient combinations.

Oats have considerable significance. In nutritive quality of the grain it is not comparable with any other fodders in cattle rations. It is also needed as a product for man's food supply. Oats are less demanding of soil fertility. Its great adaptability allows for easily using the distribution of crops to advantage in crop rotation fields. It is more suitable to cultivate this crop in the northwest of Orlovskaya oblast, in the south and central parts of Kaluzhskaya, the northern rayons of Moskovskaya oblast, in the podzolic soils of Vladimirskaia, in northeastern and northwestern Smolenskaya, in the north of Yaroslavskaya, and in the majority of the rayons of Ivanovskaya oblast.

Winter rye should also occupy a prominent place. This crop produces a higher yield both on bare and occupied fallow in sand and sandy loams than other cereals. Besides a stable yield, it creates beneficial conditions for the harvest of subsequent crops since it has the capacity to convert a number of almost inaccessible food substances into more accessible ones. Rye leaves a lot of organic matter in the soil, frees the fields early for the beginning of fall plowing, and resists weeds well.

Spring wheat planting may be narrowly practiced in the nonchernozem zone inasmuch as its yield is insufficiently stable over the years because of unfavorable conditions of the harvest season and the lack of highly productive strains. This crop has promise in the Urals region and in several rayons of the central oblasts.

The possibilities of widening the planting of grain crops are increasing with the carrying out of programs of land amelioration, the conduct of soil improvement operations, and the intensification of the use of natural forage lands. In the Ural and Volga-Vyatka regions, the average percentage of these can be brought up to 55-57%; in the Central Region, 52-54%; and in the Northwestern region, 40-42%. Thus by 1980, grain crops may occupy an average of about 52-54% of the arable land throughout the zone, versus 49.9% in the past year.

Expansion of the area of grain crop planting by roughly a million hectares is making it possible to obtain millions of additional tons of food and fodder grain that will positively affect the productivity of cattle.

The increase in the portion of grains in crop rotation may go on largely due to the reduction in bare fallow and the planting of annual and several low-yield perennial grasses. But this reduction has to be offset by a growth in the output of natural lands as well as the planting of alfalfa, clover, awnless brome grass, fescue, and other intensive types of fodder crops, while applying a broad complex of agricultural measures (top dressing of perennial grasses after each crop, two to three pass cutting, etc.)

Expansion of the area under grain crops is making it possible to enlarge food and fodder reserves and to transform the nonchernozem zone into a region of highly developed agriculture.

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## CHANGES IN PAYMENTS FOR GRAIN, SEED DELIVERY

Moscow ZAKUPKI SEL'SKOKHOZYAYSTVENNYKH PRODUKTOV in Russian No 9, Sep 79  
pp 31-35

[Article by D. Tarasenko, chief of the finance administration, USSR Ministry of Procurements, and V. Parshin, chief methodologist of the finance administration, USSR Ministry of Procurements: "Changes in the Accounts with Grain Delivery Agents"]

[Text] The "Instruction on the Procedure for Accounts with Kolkhozes, Sovkhozes, and Other Farms for Grain and Seeds of Oleaginous Crops and Grasses Sold to the State," approved in 1969 by the former State Procurements Committee of the USSR Council of Ministers (the USSR Ministry of Procurements since 1970), has been effect to this date.

Significant changes in problems of grain procurement and the introduction of accounts for them with kolkhozes and sovkhozes have taken place in recent years.

A draft of the revised Instruction was prepared to implement the decree of the USSR Ministry of Procurements. The basic changes and amendments introduced into the 1969 Instruction were coordinated with the USSR Ministry of Agriculture and USSR Ministry of Finance.

By Order No 55 dated 13 February 1979 the USSR Ministry of Procurements approved revised Instruction No 9-1--79 on the Procedure for Accounts with Kolkhozes, Sovkhozes, and Other Farms for Grain and Seeds of Oleaginous Crops and Grasses Sold to the State. The issuing of this document rescinded the Instruction on the Procedure for Accounts with Kolkhozes, Sovkhozes, and Other Farms for Grain and Seeds of Oleaginous Crops and Grasses Sold to the State approved by Order No 66 of the State Procurements Committee of the USSR Council of Ministers dated 14 May 1969.

The new Instruction incorporated the instructions of the July 1970 Plenum of the CPSU Central Committee and the USSR Council of Ministers on questions of grain procurement and changes in legislation concerning accounts which took place after the 1969 Instruction.

Here we are discussing the basic changes and amendments in the revised Instruction.

As opposed to the old Instruction, the new one states that beginning with the 1976 harvest kolkhozes, sovkhozes, and other agricultural enterprises sell grain to the state in accordance with purchase prices, instead of the previously used purchase and delivery prices.

This document also specifies an increase for the farms in increments to the purchase prices for classes I and II of hard wheat of up to 100 and 70 percent, respectively, compared with the 65 and 40 percent in effect prior to 1978. The specified scales for increasing the increments are also being computed as they were previously in regard to prices for soft wheat. A 50-percent increment has been set on purchase prices for sales of brewing barley, buckwheat, and sunflowers in excess of the plan.

We will treat in more detail the section of the new Instruction which deals with the procedure for paying a 50-percent increment in purchase prices for grain sold to the state in excess of the plan.

The total volume of procurements of agricultural products provided under contractual agreements (both according to plan and in excess of the fixed plan) are obligatory for each kolkhoz.

In accordance with the procedure established in the Instruction, it is provided that farms are paid a monetary increment on a scale of 50 percent of the purchase prices for wheat and rye, as well as for millet, feed barley, oats, corn, and peas sold to the state in excess of the plan established by it for the sale of these and other grain crops on the whole. Here payment of this increment to the farms is made for wheat and rye after they have met the fixed plan for the sale of wheat and rye together and for millet, feed barley, oats, corn, and peas for the amount of grain sold above the fixed plan for purchases of the corresponding crop.

For buckwheat and brewing barley sold by the farms in excess of the established plan a payment of a 50-percent increment to the purchase price of the corresponding crop is made regardless of the fulfillment of the plan for purchasing the grain of other crops.

For example, a farm has a fixed plan for the purchase of 100 tons of strong wheat, 400 tons of feed barley, 200 tons of oats, and 50 tons of buckwheat. It actually sells 50 tons of strong wheat, 450 tons of feed barley, 100 tons of oats, and 70 tons of buckwheat. In this case a 50-percent increment to the purchase price should be paid for the 20 tons of buckwheat grain sold in excess of the purchase plan (70 tons instead of 50). At the same time the payment of the 50-percent increment is not made for the sale of 50 tons of feed barley (450 tons instead of 400) in



excess of the plan because the purchase plan for grain as a whole was not met (the plan called for 700 tons of grain, whereas 600 tons were actually sold, excluding the buckwheat).

The amount of grain sold in excess of the plan for which a 50-percent increment is paid is determined after full accounting of indebtedness for loans in kind from state reserves subject to repayment in a given year.

The total of the 50-percent increment is determined on the basis of standard weight and established purchase price. Here the total applied monetary deductions or increments for quality, payment for drying and cleaning the grain, and also increments for high quality seeds are not taken into account. When grain is received in poor condition in excess of the plan (below 650 grams for wheat and 600 grams for rye) and where an increased monetary deduction is applied in accounting for it, the total amount of the increment at the rate of 50 percent is computed on the basis of the purchase price which has been reduced 15 to 30 percent.

For farm sales in excess of the plan for hard and strong wheat grains, as well as grain from the most valuable varieties of wheat, millet, feed barley, oats, peas, and buckwheat in respect to quality the 50-percent increment is paid on the basis of increased purchase prices for these crops, types, and varieties. The meeting of each crop's purchase plan is calculated according to the total for all types and varieties of a given crop.

Thus, hard wheat and wheat of the strong and most valuable varieties is bought at an increment of 50 percent calculated on the basis of the purchase price for soft wheat increased by a set percent depending on quality (100, 70, 20, or 10 percent for hard wheat, 50, 30, or 10 percent for strong wheat, and 10 percent for wheat and other grain crops of the least valuable varieties).

The type, variety, and quantity of grain of the specified crops actually sold in excess of the plan is established according to data from the last accepted receipts. For example, if a kolkhoz sells to the state 400 quintals of wheat in excess of the plan in the previous receipts, delivery to grain receiving enterprises of 60 quintals of Class III hard wheat paid for at a price increased 20 percent is made official. These 60 quintals are counted as above-plan purchase of Class III hard wheat and a 50-percent increment is paid to the kolkhoz for them on the basis of a 20-percent increase in the soft wheat purchase price.

Besides increasing the rates of increments to the purchase price for soft wheat, in paying for hard wheat grain one should keep in mind the fact that hard wheat grain which does not meet Class III standards is paid for at a price 10 percent above the soft wheat price only in those oblasts, krais, and republics which have met the hard wheat grain purchase plan.

The entire quantity of wheat, rye, millet, feed barley, oats, corn, peas, and buckwheat delivered is paid for at purchase prices with a 50

percent increment for farms which in general have no fixed plan for the sale of grain crops to the state.

Farms which do not have a sales plan for a single one of the crops indicated, but which do have a sales plan for other grains and legumes (rice, for example) are paid a 50-percent increment to the purchase prices for wheat, rye, millet, feed barley, oats, corn, and peas sold to the state in excess of the plan for the purchase of grain established for these farms as a whole.

With the subsequent receipt from these farms of grain from the crops specified by the purchase plans, but which were previously replaced by wheat, rye, millet, feed barley, oats, corn, peas, and buckwheat the crops received are counted as fulfillment of the purchase plans, and the appropriate amount of wheat, rye, millet, feed barley, oats, corn, peas, and buckwheat is recounted as above-plan sales and a 50-percent increment is paid.

When a farm sells the state wheat, rye, millet, feed barley, oats, corn, peas, and buckwheat instead of other grain crops, the 50-percent increment in the purchase price for the crops indicated which are sold at the expense of the plan for the other crops is not paid.

When such a farm meets the firm plan for the sale of grain as a whole and delivers additional crops previously replaced by wheat, rye, millet, feed barley, oats, corn, peas, and buckwheat, the appropriate amount is transferred to purchases in excess of the plan and a 50-percent increment to the purchase price is paid.

For example, a firm plan for the purchase of 100 tons of wheat, of which 20 tons are to be strong wheat, is set for a farm. Actually to start with 100 tons of soft wheat is sold; later strong wheat begins to be delivered. In this case the first lots of strong wheat (up to 20 tons inclusively) must be counted as fulfillment of the firm plan for the purchase of this wheat, and the corresponding amount of soft wheat is counted as sales in excess of the plan with an increment of 50 percent of the purchase price for soft wheat. The payment of a 50-percent increment to the purchase price for strong wheat in the example cited should begin with the 21st ton sold to the state.

When grains and legumes for which the payment of a 50-percent increment is not common are sold instead of wheat, rye, millet, feed and brewing barley, oats, corn, peas, and buckwheat, the 50-percent increment for these crops is not paid to the farms.

A 50-percent increment in the purchase price for above-plan sales of brewing barley in the zone established for its procurement is paid to farms regardless of the amount of barley sold in excess of the plan with the

condition that the specified brewing barley meets the standard demands for quality. The payment of a 50-percent increment is made regardless of the fulfillment of the purchase plan for grain of other crops.

The total increment is determined on the basis of standard weight and fixed purchase price for brewing barley. Here the totals of the monetary deductions made for quality, payment for drying and cleaning the grain, and also the total of the quality increment for high quality seed of brewing barley are not included in computing the total of the 50-percent increment.

A 50-percent increment in the purchase price is not paid to farms which sell brewing barley to the state as a substitute for other crops or which do not have a plan for its sales.

The recently issued Instruction not only reflects the change in the procedure for paying for sunflowers when sold in excess of the plan, but also sets forth in detail the newly introduced procedure for paying the 50-percent increments for mustard and soya and 20-percent increments for mustard, soya, and castor-oil plants.

An increment at the rate of 50 percent of the purchase price is paid for sunflower seed sold to the state by farms in excess of the firm annual plan. The 50-percent increment in the purchase price is not paid to farms which sell sunflowers to the state, but have no purchase plan for them.

On the basis of standard weight and fixed purchase price, with consideration for the increments for varieties containing a great amount of oil paid at the rate of 5 or 12 percent, a total increment of 50 percent is paid to farms for above-plan sales to the state of sunflower seed of high oil-bearing varieties. A 50-percent increment is not paid for sunflower seed purchased from farms according to established procedure if the seed have a musty-moldy or moldy odor or other defects.

Soya and mustard seeds sold to the state in excess of the actual average annual level of purchases for the previous 3 years are bought at purchase prices with an increment on the order of 50 percent.

The revised Instruction, as opposed to losing force, directs attention to the fact that if there is a break in the sale of mustard and soya, farms which suffer natural disasters are paid an increment of 50 percent of the purchase prices for mustard and soya sold to the state above the actual average annual level of their sales for the previous 3 years, excluding the years when mustard and soya were not sold to the state because of the natural disasters.

Destruction of the plants or crop failure caused by natural disasters must be confirmed by the rayon state inspection office for purchases and quality of agricultural products.

According to the new Instruction, farms which are beginning to raise mustard, castor-oil plants, and soya for the first time during the first 3 years of their sales to the state are paid an increment of 20 percent of the established purchase price for the seeds of mustard, castor-oil plants, and soya. The lists of farms to which the 20-percent increment should be paid are approved by oblast and kray executive committees and councils of ministers of autonomous republics. The amount of mustard and soya seed sold to the state in excess of the average actual level of purchases for the previous 3 years is determined on the basis of data on the purchases of oleaginous seeds of these crops obtained from rayon inspection office for state statistics and verified by the rayon procurements inspection office.

The amounts of the 50- and 20-percent increments are determined on the basis of standard weight and established purchase prices. The totals of the monetary deductions made, payment for drying and cleaning, and also totals of quality increments for seeds of sunflowers, soya, mustard, and castor-oil plants are not used in the computation.

The 1979 Instruction sets forth in detail the existing procedure for payment for grain mixtures. For example, grain receiving enterprises can accept from the farms a grain mixture as fulfillment of purchase plans when the farms have a shortage or lack of grain crops specified in contractual agreements; after appropriate verification, this must be approved by a certificate from the main state inspection office for purchases and quality of agricultural products for the rayon (the certificate is presented simultaneously with delivery of the grain mixture). In such cases they list the accepted grain mixture as fulfillment of the grain purchase plan for the results as a whole, without recording it by individual crop.

Grain receiving enterprises must accept grain mixes from farms which have met the plan for grain sales to the state without limiting the amount and must pay for it according to the existing procedure without paying the 50-percent monetary increment established for grain sales in excess of the plan; that is, the procedure for accounts for grain mixtures established in point 15 of the 1969 Instruction remains unchanged with the exception of subpoint "b" which specifies the procedure for paying for wheat mixed with over 15 percent rye. Such a grain mix in zones where the purchase price for rye is higher than the purchase price of wheat is paid for according to the purchase prices for soft wheat.

Simultaneously with the regulations set forth for accounts for the grain mix as a whole, the 1976 amendment to it introduced and puts into effect a procedure in accordance with which the grain mix accepted from farms at their request as fulfillment of the purchase plan for feed barley or other grain crops (for farms not having purchase plans for feed barley) applying the basic conditions and effective purchase prices established for

regular barley is paid for at a 50-percent increment in purchase prices for feed barley with the sale of a grain mixture in excess of the plan for the sale of this barley or other grain crops (for farms not having plans for the purchase of feed barley). In accordance with the established procedure the right to accept from farms without plans for the sale of feed barley a grain mix at their request to be counted as fulfillment of the purchase plan for other grain crops with the payment of a 50-percent increment to the purchase price for feed barley (or the sale of a grain mix in excess of the purchase plan for substitute crops) is granted to the USSR Ministry of Procurements.

In accounts for a grain mixture one should take into consideration the fact that natural grain mixtures are accepted from kolkhozes and sovkhoses under the plan for grain purchases only in the absence or shortage on the farm of individual grain crops specified in the contractual agreement. For example, a plan is set for a farm for the purchase of 100 tons of wheat, 400 tons of feed barley, and 200 tons of oats. The farm actually sells 110 tons of wheat, 440 tons of feed barley, 220 tons of oats, and 30 tons of a grain mixture. In this case the 30 tons of grain mixture is paid for according to established procedure without a 50-percent increment. The increment must be paid for the 10 tons of wheat, 40 tons of barley, and 20 tons of oats sold in excess of the plan.

As opposed to the Instruction previously in effect, the new Instruction devotes a significant place to the presentation of the existing procedure for receiving and paying for grain and oleaginous seed the quality of which does not meet the established requirements. For example, grain and seed of oleaginous crops sold to the state by farms which deviate from the restricting conditions are accepted as exceptions with permission from superior organizations. Grain and seed of oleaginous crops which deviate from restricting conditions in respect to moisture and weed admixtures, grain and oleaginous seed with harmful and difficult to separate weedy admixtures (spoiled grains, pebbles, wild oats, fatar buckwheat, corncockle, torbunting, and others) are accepted with the permission of union republic councils of ministers.

Grain and seeds of oleaginous crops which deviate from the restricting conditions in other respects of quality, including grain with difficult to separate weedy admixtures, under-ripe grain, grain with strange odors, seed (contaminated), common wormwood (except grain with a salty and musty odor, with harmful admixtures in excess of the restricting conditions, and defective oleaginous seed) can be accepted with the permission of the USSR Ministry of Procurements, taking into consideration the needs for grain and oleaginous seed and the possibilities of meeting them.

Rice containing a grain admixture (along with a weed admixture) in excess of the restrictions which is accepted from the farms as an exception with the permission of the USSR Ministry of Procurements is paid for as follows:



for rice with a grain admixture (along with a weed admixture) of over 15 percent and up to 35 percent inclusively there is a deduction from the price of one percent for every percent of grain admixture in excess of the base-line conditions;

rice having a grain admixture (along with a weed admixture) of over 35 percent is paid for at the price of feed barley and is not counted as meeting the plan for the principal crop, but is considered a grain mixture.

In accepting rice-grain having a grain admixture content of 15 to 35 percent and over 35 percent (along with a weed admixture) from the farms for the state reserves the weed admixture content is regulated by existing restricting conditions for unhusked rice-grain. In these cases, when union republic councils of ministers permit grain with a higher weed admixture to be accepted (with the exception of admixtures which are difficult to separate), the weed admixture content is limited to the amount provided for in this authorization.

Brewing barley which deviates from the restricting conditions may be accepted as an exception by special authorizations of the USSR Ministry of Procurements.

In cases where the union republic councils of ministers permit the acceptance of sunflower seed with a higher degree of moisture and weed content (except oleaginous seeds with harmful and difficult to separate admixtures), the authorizations specified extend even to high oil-content varieties of sunflower. In these cases, where the seed have a normal color and odor and also the amount of damaged seed relative to the standard for weedy or oil-yielding admixture, separately or together, does not exceed 15 percent, the monetary increment to the price is paid for them within the established range.

The conditions for paying for grain of the most valuable varieties qualitatively and seed of the high oil-yielding varieties of sunflowers which deviate from the restricting conditions in regard to the presence of difficult to separate weed admixtures, unripened seed, musty odors, sawt (contamination), and common wormwood are specified in the authorizations of the USSR Ministry of Procurements for accepting such grain and oleaginous seed.

Grain of the qualitatively most valuable varieties of the grain crops wheat, spring barley, oats, buckwheat, rice, peas, lentils, and kidney beans which meet the requirements set for grain quality for the most valuable varieties is bought at a price 10 percent higher than the purchase price for regular grain of the particular crop, while the most valuable varieties of millet universally, except in Penzenskaya Oblast, are bought for 120 rubles per ton of grain meeting the base-line conditions. In Penzenskaya Oblast the most valuable varieties of millet are bought for

119 rubles per ton in Zone I and 155 rubles in Zone II (where the distribution of farms and rayons by zones is approved in accordance with the existing procedure of the RSFSR Council of Ministers in coordination with the USSR State Committee on Prices).

When there is a lack of conformity in one or several indicators of quality to the requirements for grain of the qualitatively most valuable varieties, it is bought at the zonal purchase prices for regular grain of these crops. In these cases, when union republic councils of ministers permit the acceptance of grain with a higher moisture content and weed admixture (except for grain with harmful and difficult to separate admixtures), these authorizations are also extended to grain of the qualitatively most valuable varieties and the price increased 10 percent is retained.

In connection with the introduction in 1975 of the new GOST for fodder grass seed and several amendments to the procedure for accounts for them, the section of the Instruction "Accounts for Grass Seed" was fully revised and set forth in the subsequent edition.

Perennial and annual grass seeds delivered to procurement enterprises by the farms are accepted into the state reserves in accordance with the contractual agreements concluded and paid for according to purchase prices established by the union republic council of ministers. Superelite and elite seeds of perennial herbaceous and legume and annual legume and herbaceous fodder grasses, as well as first and subsequent generation seeds of these grasses must meet the existing GOSTs.

High quality and regular seeds of perennial and annual grasses according to sowing qualities, both those meeting the norms of seed standards (class) and those not coming up to these norms (non-class), are subject to purchase for state reserves; as a rule they are not below Class II norms for seed standard in germinating power.

In the procedure for exceptions the union republic ministries of agriculture and ministries of procurements, with the permission of the USSR Ministry of Agriculture and USSR Ministry of Procurements, can purchase those seed below Class II norms for seed standard in germinating power.

Established purchase prices are used for grass seed corresponding in quality to Class I seed standard (except the Estonian SSR).

Grass seed deviating from indicators of Class I seed standard are purchased for state reserves with application of the appropriate deductions:

- a) a deduction of 1.5 percent of the purchase price is made for each percent of purity below Class I norms;
- b) a deduction of one percent of the purchase price is made for each percent of germinating power below Class I norms;

c) a deduction of one percent of the purchase price is made for each percent of moisture above Class I norms.

A deduction of 2 percent of the Class I purchase price is made for each percent of weed content of the seeds above the norm established as the Class II seed standard. Moreover, an additional deduction of 10 percent of the Class I purchase price is made for seeds containing smartweed, dodder, or the most harmful weeds in excess of the amount set as the seed standard for Class II seed.

Seed of perennial herbaceous grasses with a mixture of couch seed in excess of Class II norms are paid for as a mixture of grasses and are accepted into the state reserves for further utilization only for converting natural fodder lands to meadows. Deductions are made only in full percents. Fractional parts up to 0.4 percent inclusively are dropped, while those 0.5 percent and over are applied as whole percents.

Elite seed of regionalized varieties of grass which meet existing GOSTs for quality and the seed of selected and local regionalized varieties are paid increments to the purchase price on scales established by union republic councils of ministers.

A monetary increment of 50 percent of the purchase price is paid for seeds of varieties and species of perennial and annual grasses in short supply. A list of these is drawn up annually by the USSR Ministry of Agriculture and Ministry of Procurements.

Monetary increments for high quality are paid for high quality seed of perennial and annual grasses on scales established by union republic councils of ministers.

The payment of a monetary increment for high quality, as well as an additional payment for delivery of seed of grass species and varieties in short supply is made only for seed of regionalized varieties from approved plantings delivered along with specified quality documents. Here payment is made for all seed of species and varieties in short supply surrendered to procurement enterprises both within the limits of the purchase plan and in excess of the plan.

For grass seed monetary accounts are established on a scale of 70 percent of the purchase price after appropriate deductions from it, taking into account deviations in seed quality from standard norms for purity and moisture set by the procurer's laboratories, and final accounts are established upon obtaining documents on the sowing qualities of these seed.

Accounts with farms for seed of annual fodder (sweet) lupine (except the RSFSR) and vetch seed delivered as fulfillment of the grain crop plan are

established on the conditions provided for grass seed, that is, the value is determined on the basis of physical weight and monetary deductions are made for reduced purity and germinating power, increased moisture and content of unguaranteed weeds in excess of Class III norms. Moreover, in accounts with farms for seeds of vetch and annual fodder (sweet) lupine, feed legumes and peas and with deviations of the seeds from the Class I quality norms for moisture and purity, payment is collected for drying and cleaning at rates set for grain and oleaginous crops.

The new Instruction provides for a change in the scale of payment for drying castor-oil plants. Currently the payment for drying is one ruble per ton for each percent of moisture in excess of the base-line conditions instead of the previous payment of 1 ruble 40 kopeks.

Besides the basic changes and amendments considered, several other changes dealing with procurements and accounts for grain and oleaginous seeds were also introduced in the new Instruction No 9-1--79 on the procedure for accounts with kolkhozes, sovkhoses, and other farms for grain and seeds of oleaginous crops and grasses sold to the state.

Careful study locally and practical application in accounts with kolkhozes of Instruction No 9-1--79, approved by order No 53 of the USSR Ministry of Procurements dated 13 February 1979, will assure that grain receiving enterprises adhere to the established procedure for accounts with kolkhozes and sovkhoses for grain and seeds of oleaginous crops and grasses sold to the state.

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## CONVERTING FODDER PRODUCTION INTO A HIGH INTENSITY SECTOR

Масштаб ВЕСТИНИХ СЕЛ'СКОХОЗЯЙСТВЕННОЙ НАУКИ in Russian No 11, Nov 79 pp 173-187

[Article by VASKHNIL academician N.G. Andreyev]

[Text] The party and the government are devoting constant and unflagging attention to problems regarding future development of the agricultural sector, and particularly to one of its most important branches, livestock raising. At the June (1978) CPSU Central Committee Plenum, it was emphasized that the task of more rapidly developing livestock raising is being given first priority. The chief route to resolve this task is the conversion of livestock raising to an industrial base, its specialization and concentration. The chief condition, and an obligatory one, is an outstripping rate of development for the fodder base, and the conversion of fodder production to a modern specialized sector of the national economy.

Such a formulation of the question is not only necessary, it is also possible. The fact that the party is now placing the cardinal and comprehensive resolution of fodder production on the agenda is far from being by chance. If the entire path traveled by this sector during Soviet administration is examined, those changes in fodder production occurring in recent years become clearly visible. They are graphically evident in the examples of expanded sown areas under fodder crops, increased gross harvests, and fodder expenditures for public livestock raising. According to data furnished by the USSR Ministry of Agriculture, only 3.3 million hectares of fodder crops were sown in pre-revolutionary Russia. In 1928, this figure had grown to 3.6 million hectares, and to more than 60 million hectares during the years of the Ninth Five-Year Plan. The gross yield of hay, including green fodder converted to hay, increased from 75 million tons in 1940 to 134 million tons in 1976. The average annual expenditure of fodders for the three years of the Tenth Five-Year Plan reached almost 393 million tons of feed units, increasing by 30 million tons in comparison with years of the Ninth Five-Year Plan. The proportion of concentrate feeds in animal rations increased—annual expenditure exceeded 135 million tons; the share of balanced feeds (kombikorm) in concentrates is currently about 32 percent. The expenditure of succulent and coarse fodder also increased, amounting to 214.4 million tons. In the first three years of the current five-year plan, these figures have increased to 223.3 million tons, and the use of succulent fodders increased correspondingly, from 301.8 million tons to 336.6 million tons.



Mechanization of operations in fodder production grew immeasurably after the revolution. In recent decades, labor productivity in this sector has virtually doubled. Considerable qualitative changes have occurred in fodder procurement and storage technologies. Progressive methods have found broad application in agricultural production—preparation of silage, grass flours and cuttings, briquets, and granules. The production of silage, for example, rose from 42.1 million tons annually during the Ninth Five-Year Plan to 70.4 million tons in 1978.

Scientific potential has grown significantly during the recent decade in the field of fodder production. Particularly productive in this respect were the years following the March (1965) Plenum of the CPSU Central Committee, which developed bases for the agrarian policy of the party for the modern stage, defining the course toward intensification of all branches of agriculture based upon comprehensive mechanization, chemicalization, and widespread land reclamation. An important task was levied upon science in the area of feed production: to provide production with scientifically based recommendations for consolidating the feed base for livestock raising founded upon the intensive utilization of all feed resources. Almost 130 institutions in this country worked on the solution to this problem. In all primary natural-economic zones of the Soviet Union including the Ukraine, Kazakhstan, Kirghizia, Azerbaijan, Siberia, and the Non-chernozem Zone of the RSFSR, feed institutes were established, and a number of scientific institutions organized departments and laboratories for livestock feed production. In the period 1973—76, 5 specialized and 13 complex centers for fodder crops were established. Scientific cooperation with foreign countries increased significantly, primarily with CEMA countries. Soviet scientists took a very active role in the work of international congresses on grassland management, one of which convened in Moscow.

All this facilitated a rather broad scale development of feed production bases, and a number of key questions were resolved in this sector. In the field of grassland management, for example, theoretical bases were developed and practical recommendations prepared for creation and use of highly productive cultivated hay fields and pastures, including irrigated. The modernization of low-yield fodder lands on an intensive basis is providing a sharp increase in productivity to 4-7 thousand feed units with irrigation. Work to convert meadows and pastures is growing in scale every year. According to data furnished by the USSR Ministry of Agriculture, a radical improvement of 7,246,000 hectares of natural fodder lands was effected during the Ninth Five-Year Plan, of 10,415,000 hectares in the Ninth Five-Year Plan, and during the first three years of the current five-year plan, improved lands amount to 4,558,000 hectares. In the period 1971—75, 1,340,500 hectares of irrigated hay fields and pastures have been created, and 748,400 hectares in 1976—1978.

In developing methods to increase the productivity of meadowlands, a number of important theoretical and practical questions were resolved, particularly regarding mineral and water nutrients for plants. The most efficacious methods of watering and irrigation modes and norms were established, and

calculation methods devised for optimum dosages of mineral fertilizers for various agro-environments. Research results permitted the establishment of the influence of soil conditions and fertilizers upon yields of legume-grain and standing grass crops, chemical composition and digestibility of feeds, productivity and health of animals, and the quality of milk and other livestock produce. It was noted at the XII and XIII International Congresses of Grassland Management that Soviet scientists are noticeably outstripping their foreign colleagues in the study of this problem.

In the sphere of field fodder production, questions relating to improving the structure of areas under crops, methods and techniques were concurrently developed for the production of fodder in plowed areas, the implementation of which will provide for increased yield of field fodder crops by a factor of two. The scientists proposed a technique for multi-crop (3 to 4 times a season) use of perennial grasses. Application of this technique permits the output of feed units per hectare to be increased by a factor of 1.5 to 2, and to procure fodder which is not inferior to concentrates in terms of nutritional properties, and exceeds them in protein content. A more intensive use of the field plots also is facilitated by a system developed by science for intermediate sowings of fodder crops. The productivity of a hectare of plowed land here increases in regions with sufficient moisture up to 12,000 feed units, and in irrigated lands of the southern European areas of the country, to 18-20,000 feed units.

An important reserve in consolidating the fodder base for livestock raising is the expansion of fodder crop assortment through the cultivation of new plants having valuable commercial-biological properties. During the past 25-30 years, more than 300 species of plants from 12 families have been studied, of which more than 50 different species have been proposed for production testing and assimilation. Performing well, for example, have been new plants such as the Sosnovskij cow parsnip, or *Heracleum*, the *Polygala* (Polygala), comfrey (*Symphytum*), all'fire, rumbart, goat's rue (*Galaga officinalis*), Cranberry, mallow (*Malva*), and several others. They demonstrate high yield and nutrition, a productive long life, and the ability to grow from early spring to late autumn, cold and disease resistance, and are well adapted for ensilage. The yield of green volume for these crops is 300-700 centners/hectare, and digestible protein content of 110-160 grams per feed unit. The registered type of Sosnovskij cow parsnip, "Success" yields up to 100 centners/hectare of green volume. It is important that these crops provide significantly less expensive feed than do the traditional field fodder crops.

Science has devoted considerable attention to problems related to the procurement and storage of feeds, which has resulted in the development of progressive technological methods sharply reducing loss of nutrients in the procurement and storage of fodders, which has improved their quality. The ensilage technique recommended for production, for example, has produced, when compared to traditional methods for preparing grasses, an additional 2,000 feed units and 500 kg of digestible protein from each

hectare. Practice has demonstrated the value of the new type of feed—the preparation of ensilage on kolхозes and sovkhoses increases each year. Good results are being obtained with artificial hay-drying with active ventilation-blowing, the use of new chemical preservatives (organic acids) during ensilage operations, and the production of desiccated feeds in briquet and granular form.

It is important to note that the solution of a majority of problems was provided by science with an allowance made for myriad soil-climatic conditions throughout the country. The contribution of science and industry in the consolidation of the fodder base has positively affected the development of livestock raising, which has become a leading sector of agriculture in many oblasts, krais, and republics.

However, the level of livestock raising production attained still is incapable of satisfying increased demands of the country's population for highly valued food products. One of the reasons for this, as before, remains a shortage of feeds and their low quality. In order to secure the volume of livestock production earmarked, it will be necessary to raise feed production next year to 475 million tons of feed units. In order to accomplish this task, all reserves will have to be activated, and all fodder production resources must be utilized to the maximum. Primary sector problems encountered in the intensification effort are: improvement of sowing structure and improvement of fodder crop yield in field and arable; rational utilization of natural fodder lands based upon their radical improvement and the creation of high-yield hay fields and pastures; improvement of nutrient value of feed rations through increased protein content; reduction of loss and improvement of quality of feeds as the result of employing progressive techniques in procurement and storage; increasing the output of balanced feeds from privately produced grain with the use of industrial protein-vitamin supplements.

Considerable work remains in the area of annual crop selection, particularly of grain and legume crops. Increased production of grain remains a key problem in developing the fodder base. Crops such as barley and oats not only possess high feed values, but also exceed the yield of other spring grain crops in primary cultivation regions. Incidentally, large areas in our country are being sown with a type of oats regionalized 40-45 years ago which do not satisfy high agro-environment and irrigation conditions. Practically speaking, no new regionalized varieties of domestically selected oats exist for areas of the Urals, western Siberia, and the Far East, where soil-climatic conditions permit a significantly expanded use of these crops.

The creation of high-yield varieties of leguminous crops is one of the ways to solve the protein problem. The varieties developed by plant breeders in lucernes, Tashkent 3102 and Kherson 7 yield, with irrigation, up to 750 centners/hectare of dry substance, and the Tetraploid red clover varieties in the Non-chernozem Zone—160 centners/hectare. The Kherson breeding center for fodder crops has created new lucerne populations

resistant to repeated mowings during early stages of the growing cycle for the preparation of vitamin flours. It will be advantageous to continue this work. Annual legume crops showing promise for breeders are the fodder varieties of soya, lupins, vetches (*Vicia*), rape (*Brassica napus*), Sudan grasses, sorghum, seradilla (*Ornithopus sativus*), and others. In severe climatic conditions of the arid zone, an expansion of work to introduce local wild-growing grasses--kochia, wild rye (*Elymus*), winterfat (*Eurotia*), kejreuk, and others.

In summary, it is expedient to once again focus attention upon those primary problems, the resolution of which determine the development of the fodder base for the livestock raising sector. They are--development of scientific bases for the organization of specialized enterprises and associations for fodder production with consideration given for its conversion to an independent sector of the economy; increased research in the standardization of production techniques, in an evaluation system and quality monitoring for feeds; creation of high-yield varieties of fodder crops for field and meadow production which satisfy the requirements of intensive farming operations, perfecting a commercial plant breeding system on an industrial base; development for various natural-climatic zones within the country of comprehensive organization techniques and for the utilization of hay field crops and pastures based upon sown and the best natural, primarily swamp grass stands; development of progressive feed production techniques on field areas, of highly productive crop rotation systems with allowance for the specialization and concentration of livestock raising; the solution of the protein problem; the foundation of progressive feed procurement, storage, and processing technologies providing for preservation of nutrients and high feed quality; and providing for the broad implementation of scientific recommendations in the production of feeds.

ИЗДАТЕЛЬСТВО "Колос", "Вестник сельскохозяйственной науки", 1977

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## MINSKAYA OBLAST FEED PROCUREMENT CRITICIZED

### Food Scraps Under-Utilized

[Editorial Report] In Minsk SOVETSKAYA BELORUSSIYA in Russian 27 Dec 79 p 3, an article takes Minskaya Oblast to task in a 700-word article for many shortcomings and discrepancies in its program to gather food scraps for livestock feed. The article makes the point that this is an important under-utilized resource, a conscientious attitude to which make for availability to kolkhozes and sovkhozes of additional dozens of tons of feed each month. "One ton of scraps serves in place of 250 kilograms of grain from which 50 kilograms of pork may be produced."

However, members of the inspection team found matters out of order in several rayons and much of the rest of the article is devoted to a discussion of the local problems. The failure to solve these problems results in failure by livestock to achieve planned weight gains, a prime cost per kilogram of weight gain almost triple that of the better organized enterprises and the slaughter of underweight livestock.

"Managers of trade in the oblast must press for solutions to problems of supplying departmental organizations with motor vehicle transport, stock and equipment for storing, transporting and processing food scraps. Those who constantly foil the established plans must be dealt with sternly. This matter is serious and must be treated in a businesslike manner."



Cartoon Comment

Minsk SEL'SKAYA GAZETA in Russian 29 Jan 80 p 4

[Cartoon by A. Garmazy]

[Text] At forest enterprises they frequently make uneconomical use of pine twigs, they burn them.



"For us the plan for feed is a burning issue."

"For us the pine twigs are a burning issue."

CSO: 1824

## WEATHER CONDITIONS' AFFECT ON SOIL AND CROPS

### Crop Development Reviewed

LD011105 Moscow SEL'SKAYA ZHIZN' in Russian 15 Jan 80 p 3 LD

[Report by agricultural meteorologist N. Ignatova under the rubric "USSR Hydrometeorological Center Reports": "The Weather and the Crops"]

[Text] Warm weather for this time of year persisted in the first 5 days of January over the European part of the USSR. It was particularly warm in the southwest of Krasnodarskiy Kray and in the southern Ukraine, where the maximum air temperature on individual days was 9-14 degrees and in places 17 degrees. Almost everywhere in this period the average daily temperature was 1-7 degrees higher than normal. In the second 5-day period air temperatures over a large part of the territory fell considerably and cold weather persisted until the end of the 10-day period. In the Urals, the Komi ASSR, the Central Region, in places in the north of the Central Chernozem Zone and the southwest of the Volga-Vyatka Zone and also in individual regions of the Volga region, in the western Ukraine, Belorussia and the Baltic the minimum temperatures dropped to minus 20, minus 25 and in places as low as minus 28 degrees.

In the western part of the European territory of the USSR there was considerable precipitation (11-30 millimeters over the 10-day period) as a result of which the depth of the snow cover increased by 5-10 centimeters. On the last day of the 10-day period in the western half of the Ukraine and over a large part of the Central Chernozem Region, Moldavia, Belorussia and the Baltic republics it was 10-20 centimeters and in places (in the Carpathians) 20-30 centimeters. In the central belt and over a large part of the Urals and northwest regions the depth of the snow cover was 15-30 centimeters, and in the Komi ASSR and the majority of regions in Vologodskaya, Kostromskaya, Kirovskaya and Permskaya oblasts it was 31-50 centimeters. This depth of snow cover reliably protected overwintering crops from frost. The soil temperature at winter grain crop tillering node depth and grass collet depth in this zone remained between minus 3 and minus 9 degrees, which is considerably higher than the critical temperature for overwintering crops. In regions with very deep snow cover it was close to zero.

In Western Siberia the average air temperature was 1-4 degrees above normal. The depth of the snow cover in the majority of regions was 11-30 centimeters. The soil temperature at winter crop tillering node depth was minus 4-9 degrees and in places minus 10-12 degrees. Conditions for the overwintering of winter crops were favorable.

In the Transcaucasus republics, Central Asia and southern Kazakhstan it grew cooler at the end of the 10-day period. In the majority of regions air temperatures dropped at night to minus 7 degrees, in northern Uzbekistan to minus 13 degrees and in the valleys of Kirgizia to minus 16. The vegetation of winter crops has ceased.

#### Soil Temperatures Avoid Winterkill

LD011329 Moscow SEL'SKAYA ZHIZN' in Russian 24 Jan 80 p 2 LD

[Report by agrometeorologist N. Ignatova under "USSR Hydrometeorological Center Reports" rubric: "The Weather and the Crops"]

[Text] In the second 10-day period of January the weather was cold over the greater part of the USSR's European territory. The average air temperature over the 10 days in Belorussia, Moldavia, the Ukraine, the greater part of the Central Chernozem and North Caucasus regions and the lower Volga region was 3-5 degrees below normal, while in the West Ukraine, Krymskaya Oblast, the south of Rostovskaya Oblast, the northern rayons of Krasnodarskiy Kray and the Kalmytskaya ASSR it was 6-8 degrees below normal. Very heavy frosts (minus 30-40 degrees and in places minus 41-43 degrees at night) were observed in Arkhangelskaya Oblast, Komi ASSR and the north of the Volga-Vyatka region and in the Urals and in places in the central region.

There was little precipitation in the European part of the USSR. Only in the south of the Volga-Vyatka Zone, in the majority of oblasts of the northwest and Volga regions and in the northeast of the Central Region was significant precipitation observed (11-25mm). The deepest snow cover, 30-60cm, was in Komi ASSR, Krymskaya Oblast and the greater part of Vologodskaya, Kostromskaya, Gorkovskaya and Permskaya oblasts. In the central area it was half this depth.

The wintering of fall-sown crops proceeded favorably, since snow cover of this depth protected the crops safely against frost. The soil temperature at tillering node depth remained within the optimal limits for winter (minus 4-9 degrees). In regions with a very deep snow cover the temperature was minus 1-3 degrees. In the South Ukraine (south of the Kishinev-Cherkassy-Donetsk line), where a light snow cover lay on the fields, the minimum soil temperature at tillering node depth remained within the limits of minus 9-12 degrees, which is above the critical winter kill temperature even for underdeveloped winter crops. Wintering conditions were satisfactory.

In the majority of regions of the arable zone of West Siberia and the eastern part of Kazakhstan it continued milder than usual. Winter grain crops in the majority of oblasts were under a sufficiently deep (20-35cm, and in places over 40cm) snow cover.

In the first days of the 10-day period cold air spread to the regions of the Transcaucasus and Central Asia. Winter grain crops were in a state of winter dormancy over the majority of the 10-day period. The drop in air temperature on the Black Sea coast of the Caucasus to minus 7 degrees will have caused partial damage to the citrus crops.

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